3.7993

UNITED STATES SIGNAL SERVICE
MONTHLY WEATHER REVIEW.

VOL. XIX. WASHINGTON CITY, MAY, 1891. No. 5.

INTRODUCTION.

This REVIEW is based on reports for May, 1891, from 2,461 regular and voluntary observers. These reports are classified as follows: 171 reports from Signal Service stations; 118 reports from United States Army post surgeons; 1,584 monthly reports from state weather service and voluntary observers; 28 reports from Canadian stations; 191 reports through the Central Pacific Railway Company; 369 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Service;" monthly reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa Weather and Crop Service, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, North and South Dakota, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, and Wisconsin, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR MAY, 1891.

The month was the coolest May on record at a number of stations in the south Atlantic and west Gulf states, the Ohio Valley, and southwest Arizona. The only districts in which the month was warmer than usual were the Canadian Maritime Provinces, the north Pacific coast, the greater part of the middle and northern plateau regions, and from the middle plateau northeast to Lake Superior. The highest maximum temperature reported by regular stations of the Signal Service was 100° at Yuma, Ariz., and Columbia, S. C., and by a voluntary observer, 110°, at Volcano Springs, Cal. At Bismarck, N. Dak., the maximum temperature was 1° higher than previously reported for May. The lowest minimum temperature reported by a regular station of the Signal Service was 15°, at Fort McKinney, Wyo., and by a voluntary observer, 1°, at Breckenridge, Colo. At a number of stations in the Atlantic coast states, the lower lake region, the upper Ohio valley, south Louisiana, east Texas, south Kansas, and the extreme northwest, the minimum temperature was lower than previously reported for May. Unusually cold weather prevailed east of the Mississippi and Missouri rivers from the 5th to 7th; in Kansas on the 11th; and from western New York to Michigan on the 17th. From the 5th to 7th killing frost occurred east of the Mississippi River as far south as Tennessee and North Carolina; on the 11th in Nebraska; on the 13th in Kansas; on the 17th in West Virginia, Michigan, and Iowa; and on the 27th in Ohio and New York, its occurrence in the districts named being two to seven weeks later than usual.

The monthly precipitation was the heaviest ever reported for May at Santa Fé, N. Mex., Fort Grant, Ariz., Winnemucca, Nev., and Fort Assinniboine, Mont., and it was the least ever reported for May at Eastport, Me., Wilmington, N. C., Mobile, Ala., Chattanooga, Tenn., Cincinnati, Ohio, Rochester, N. Y., Marquette, Mich., Moorhead, Minn., and Neah Bay, Wash. East of the Rocky Mountains the precipitation was generally deficient, except in the interior of the south Atlantic states, the greatest deficiency, 4.00 to 5.00 inches, being noted over south Louisiana and east Texas. Over the Rocky Mountain and plateau regions and on the middle Pacific coast the precipitation was generally in excess of the average. Over the southern plateau region more than three times the usual amount of precipitation was reported, and on the northeast slope of the Rocky Mountains, over the middle plateau region, and along the middle Pacific coast the precipitation averaged about one-fourth greater than usual. At Key West, Fla., less than one-tenth of the usual precipitation fell, and in New England, the east and west Gulf states, the Ohio Valley and Tennessee, the Lake region, the upper Mississippi valley, and the northern plateau region the monthly precipitation averaged from one-fourth to one-half of the average amount for May. In western North Carolina the excessive rains of the latter part of the month damaged crops. In central New Mexico the month was reported the wettest May since 1866. In southwestern California some damage was caused to hay and grain by the rains of the middle part of the month. Very dry weather prevailed generally in the Mississippi and middle Missouri valleys, and thence eastward to the Atlantic coast. In the Ohio Valley and thence over Iowa, Minnesota, and the Dakotas, the drouth was broken by rains of the 18th to 21st.

On the 2d a severe storm visited Paducah, Ky., injuring a number of persons and damaging many buildings; and a severe local storm was reported near Goodrich, Kans. On the 4th a small whirling storm occurred at New Orleans, La. On the 20th a tornado moved eastward over Boone and Audrain counties, Mo., killing 4 persons, injuring 35 or more, and destroying property to the estimated value of over $100,000, and destructive hail storms occurred in Missouri, Illinois, Kansas, Oklahoma Territory, and Arizona.

High water, due largely to melting snow in the mountains of southern Colorado, prevailed along the Rio Grande River in New Mexico and west Texas during the first half of the month, causing great destruction of property, etc., and the Pecos River was the highest ever known. The lower Mississippi river subsided and fell below the danger-line at Vicksburg, Miss., on the 15th, and at New Orleans, La., on the 22d. Destructive forest fires occurred in the pine and cranberry districts of south New Jersey; in the mountains of Pennsylvania and southeast New York; the upper part of lower Michigan; and about Duluth, Minn., and Superior, Wis.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for May, 1891, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart II by isobars. The departure of the mean pressure for May, 1891, obtained from observations taken twice daily at the hours named, from that determined from hourly observations, varied at the stations named below, as follows:

Station.	Departure.	Station.	Departure.
Cleveland, Ohio	+.002	Saint Louis, Mo	—.001
Chicago, Ill	+.002	Saint Paul, Minn	—.001
Duluth, Minn	+.002	Memphis, Tenn	—.002
Key West, Fla	+.005	Moorhead, Minn	—.005
Washington City	+.006	Denver, Colo	—.006
Atlanta, Ga	+.006	Dodge City, Kans	—.008
Lynchburgh, Va	+.007	Salt Lake City, Utah	—.009
New York City	+.008	Abilene, Tex	—.010
Eastport, Me	+.010	Santa Fé, N. Mex	—.010
Jacksonville, Fla	+.010	Fort Assinniboine, Mont	—.012
Wilmington, N. C	+.012	San Francisco, Cal	—.014
Boston, Mass	+.013	Portland, Oregon	—.015
Pittsburg, Pa	+.013	El Paso, Tex	—.018
Albany, N. Y	+.014	Yuma, Ariz	—.023

The mean pressure was highest from the upper Mississippi valley to the west part of the lower lake region, where it was above 30.10, and was lowest over the west part of the southern plateau region, where it fell to 29.78 at Keeler, Cal. The highest mean pressure for May generally occurs along the middle and south Atlantic coasts and on the north Pacific coast, where it was above 30.10 in 1876, 1879, and 1880, and the current month was the first May in the history of the Signal Service for which the mean pressure was 30.10 or above over the interior of the country.

A comparison of the pressure chart for May, 1891, with that of the preceding month shows that there was an increase in mean pressure, save over the Rocky Mountain and plateau regions, on the Pacific coast south of the 45th parallel, and over the south Atlantic and east Gulf states. The greatest increase in mean pressure occurred in the upper Mississippi valley, where it was .10, and the most marked decrease was noted over the west part of the plateau region, and over the middle Pacific and immediate south Atlantic coasts, where it was .05 or more. The highest mean pressure for the preceding month was shown on the immediate middle Pacific coast, and over the region lying east of the Mississippi and south of the Ohio rivers, where it was above 30.05, and the lowest mean pressure occurred over the Canadian Maritime Provinces, over the British Possessions north of west Montana, and over the west part of the southern plateau, where it was below 29.90.

In May the mean pressure was above the normal, except along the coast of the Gulf of Saint Lawrence, over the west part of the plateau region, and on the middle and north Pacific coasts. The greatest departure above the normal pressure occurred over the central and north-central parts of the country, where it was more than .10, and the most marked departure below the normal was noted on the north Pacific coast, where it was more than .05.

HIGH AREAS AND STORMS, MAY, 1891.

The more marked general weather conditions of the past month have been as follows:

Air pressure above the normal for the whole country, except slightly below in the middle and north Pacific states. The departure was +.17 at La Crosse, Wis., and +.15 at Davenport, Iowa.

Temperature below normal for nearly the whole country, reaching —5° at Cincinnati, Ohio.

Rainfall below normal, except in the interior of the middle Atlantic states and in the Rocky Mountain region.

These general conditions have been induced by a rather remarkable movement of high areas and storms. An examination of Chart I will show that the storms have been confined to the north border of the country and the immediate Atlantic coast. There is an enormous area extending from the west border of the Atlantic states to the Rocky Mountains where no storms are found. In the Mississippi Valley there were two beginnings of storms, which, however, were extremely indefinite and continued only a few hours.

The paths of the high areas, on the other hand, were very much farther south than is ordinarily the case, and these dominated the weather over almost the whole country during the month.

A tabular statement of the principal points relating to high areas and storms will be found at the close of this section, and the following resumé of their movements is here given:

HIGH AREAS.

I.—During the first 3 days of the month this high area appeared in the N. W. T., nearly stationary. It then moved in a nearly sse course, reaching the middle Gulf region on the 10th. It had the slowest motion of any high area during the month, 14 miles per hour.

II.—On the 8th a high pressure area appeared off the north Pacific coast. It moved rather rapidly east and southeast, reaching Ind. T. on 11th. It then moved a little north of east and reached the Massachusetts coast on 14th.

III.—While II was in the lower lake region there appeared high area III in Manitoba. Its motion was somewhat retarded by II, but it passed off the Nova Scotia coast in a path almost due east on 16th.

IV.—This high area began on the 12th, like the last, off the north Pacific coast. Its path was almost east, passing off the Nova Scotia coast on 20th.

V.—This began on 18th off the north Pacific coast, as II and IV had already done. It moved first due east, reaching Lake Superior on 22d, thence it moved ese., reaching the middle Atlantic coast on 24th.

VI.—Began in Alberta, 23d, and moved ese., reaching Michigan on 26th, thence its path was due east to the Nova Scotia coast, which it reached on 29th.

VIII.—This high area began in Alberta, 28th, and moved during its whole course north of this country, reaching Nova Scotia on 31st. As has been noted before in the case of high areas moving so far north, its velocity was the greatest of the month, 35 miles per hour. The connection between these high areas and storms will be noted under the next heading.

STORMS.

An examination of the storm tracks of previous years in May shows them exceedingly infrequent along the Gulf coast, and this peculiarity was specially marked during the month. This may be in part due to the fact that in this month the land areas are rapidly heating up while the Gulf area continues cool on account of the water surface. The number of storms and their average velocity are given in the accompanying table:

Year.	Number.	Velocity.	Year.	Number.	Velocity.
1873	8	25.0	1883	9	30.0
1874	6	23.0	1884	9	27.0
1875	8	30.0	1885	7	24.0
1876	9	25.0	1886	11	25.0
1877	7	27.0	1887	10	18.0
1878	7	18.0	1888	10	27.0
1879	6	25.0	1889	9	21.0
1880	7	25.0	1890	12	31.0
1881	5	32.0	1891	8	22.0
1882	4	22.0	Mean	8	25.0

During the first three days of the month there was a stationary disturbed condition of the atmosphere in the southwest, but without a definite storm movement.

I.—On the afternoon of 4th a storm of slight intensity approached the middle Atlantic coast. This was traced southward 1½ day to the coast of Florida. This unusual direction was induced by the onward progress of high area I which domi-

nated the weather over the whole country east of the Rocky Mountains.

II.—This storm was developing for several days on the north Pacific coast, previous to 6th, being kept back by high area I. Afternoon of 6th the lowest pressure of the month was reported from Calgary. There was a remarkable absence of rain in the southeast quadrant of this storm throughout its motion during 5 days. As was noted in the March REVIEW, this was due in part to the enormous mass of warm, dry air that was poured into the low area from the high area to the se. and s. The gradients from south winds became very steep on 7th, causing a wind of 48 miles per hour at Huron, S. Dak., and 42 per hour at Fort Sully, S. Dak. The rain condition in the rear of this storm was marked, the heaviest precipitation of the month at Fort Assinniboine, Mont. (1.16), occurring on 8th.

III.—In many respects this was the most remarkable storm of the month. While II was passing off the Nova Scotia coast, 11th, an offshoot or secondary was developing off the middle Atlantic coast, p. m., 11th. The movement of this storm was like that of I, down the Atlantic coast, being in part forced back by high area II. Heavy rains occurred in the interior of North Carolina, over 3 inches falling in 36 hours at Charlotte, 12th and 13th. This storm moved down the coast and recurved in South Carolina, 13th. It then passed up the coast, disappearing in the Gulf of Saint Lawrence, 18th. Almost the only rain of the month in the interior of New York occurred during its progress.

IV.—This storm began in Manitoba, 13th. Its motion was along the north border of the country and, like II, there was very little rain in its southeast quadrant. It was merged with III during 16th.

V.—Came down to Manitoba from the northwest. It was somewhat retarded in its progress at first by high area IV. The gradients were somewhat similar to those in II. On the night of 19th appearances indicated violent storms for Iowa, which were predicted for the next afternoon. Violent storms were also predicted the next morning for north portions of Missouri and Illinois. An examination of the chapter on winds will show that the severest tornadoes of the month occurred in Missouri, Iowa, and Illinois on the afternoon of 20th. The heaviest rain of the month in Mississippi (3.50) occurred at Brookhaven, 19th.

VI.—While the former storm was moving east a trough of low pressure extended from it sw. to Texas on 20th. The lower portion of this trough gradually filled up and disappeared in Iowa on 22d. On this date a slight influence from the above secondary may have extended far to the northwest and united with storm number VI. This storm had very slight intensity and moved almost its entire distance along the north border of the country, passing into the Gulf of Saint Lawrence on 27th. Very slight rains and winds attended its course. In connection with this storm there was a widely-extended disturbed region to the southward on 24th and 25th, but no well-defined storm. A severe local outburst occurred in se. Kansas on night of 24–25th, 2.08 inches of rain in 24 hours being reported at Wichita.

VII.—This storm appeared in Alberta on 26th, and its motion and formation were dependent in a large measure upon high area VI, which had advanced to the southeast in its front. The motion of this storm, 15 miles per hour, was very slow, and, in fact, it did not move to the east of the Mississippi River before the end of month, being hindered by the high already mentioned.

VIII.—This was a remarkable storm in that it moved almost due west. It originated on 26th in se. Georgia, and was last noted on 28th in se. Mississippi. Very heavy rains were reported from North Carolina, South Carolina, Georgia, and Florida during its progress. The velocity was the least of any storm during the month, 9 miles per hour.

Tabulated statement showing principal characteristics of areas of high and low pressure.

Barometer.	First observed.			Last observed.		Duration.	Velocity per hour.	Maximum pressure change and maximum abnormal temperature change in twelve hours and maximum wind velocity.										
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.			Station.	Rise.	Date.	Station.	Fall.	Date.	Station.	Direction.	Miles per hour.	Date.
High areas.		°	°	°	°	*Days.*	*Miles.*		*Inch.*			°					
I	1	52	110	30	90	9.0	14	Green Bay, Wis	.38	4	Bismarck, N. Dak	16	1	Chicago, Ill	ne.	36	3
II	8	45	124	41	69	6.5	25	Marquette, Mich	.44	10	Fort Assinniboine, Mont.	30	8	Kitty Hawk, N.C	ne.	36	13
III	12	51	101	47	56	4.0	23	Port Arthur, Ont	.28	13	Moorhead, Minn	21	13	Marquette, Mich	nw.	28	13
IV	12	43	126	43	64	8.0	22	Bismarck, N. Dak	.44	15	Cheyenne, Wyo	26	15	Chicago, Ill	ne.	38	16
V	18	47	127	40	70	6.5	23	Saint Paul, Minn	.48	21	Denver, Colo	26	20	Fort Custer, Mont	ee.	36	21
VI	23	53	117	45	62	6.0	21	Fort Buford, N. Dak	.32	24	Marquette, Mich	25	24	Atlantic City, N. J	ne.	30	27
VII	28	55	114	46	62	3.0	35	Qu'Appelle, N. W. T	.44	29	Swift Current, N. W. T	22	28	Qu'Appelle, N. W. T	ne.	24	28
Mean						6.1	23		.40			24				33	
Low areas.									Fall.			Rise.					
I	4	36	77	30	80	1.5	28	Savannah, Ga	.16	5	Savannah, Ga	10	5	Kitty Hawk, N.C	ne.	42	5
II	6	50	112	46	58	5.5	25	Minnedosa, Man	.40	6	Fort Assinniboine, Mont.	32	6	Montreal, Quebec	sw.	48	10
III	11	40	73	50	65	6.5	18	Eastport, Me	.30	16	Augusta, Ga	13	11	Sandy Hook, N.J	nw.	39	17
IV	13	54	107	47	77	2.0	33	Port Arthur, Ont	.42	14	Huron, S. Dak	20	13	Chicago, Ill	n.	48	15
V	16	53	112	45	57	6.5	21	Father Point, Quebec	.34	21	Saint Vincent, Minn	24	17	Atlantic City, N.J	nw.	48	22
VI	22	52	112	48	60	4.5	30	Duluth, Minn	.22	23	Duluth, Minn	20	23	Sioux City, Iowa	nw.	32	24
VII	26	54	111	42	97	5.0	15	Fort Sully, S. Dak	.30	27	Saint Vincent, Minn	24	26	Huron, S. Dak	s.	44	28
VIII	26	32	82	30	87	2.0	9	Wilmington, N. C	.10	26	Montgomery, Ala	9	27	Kitty Hawk, N.C	ne.	46	27
Mean						4.2	22		.28			19				44	

NORTH ATLANTIC STORMS FOR MAY, 1891 (pressure in inches and millimetres; wind-force by Beaufort scale).

The paths of the storms that appeared over the west part of the north Atlantic Ocean during May, 1891, are shown on Chart I. These paths have been determined from international observations by captains of ocean steamships and sailing vessels received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

The month was unmarked by storms of marked severity. On the 1st a storm, which had advanced from the southwest during the latter part of April, was central on the southwest edge of the Banks of Newfoundland, with central pressure about 29.20 (742), and fresh to strong gales, whence it moved northeastward and disappeared in the direction of Iceland after the 4th. On this date a storm, with pressure below 29.20 (742), was central over or near extreme north Scotland, whence it apparently moved eastward over the North Sea. On the 5th a feeble storm was central off the south Atlantic coast, and a storm, with pressure below 29.50 (747), was central over the

west part of the Gulf of Saint Lawrence. On the 6th a storm was central west of Bermuda, and the pressure fell to 29.65 (753) at Bermuda, with fresh south wind; moving thence northeast the storm was central over the Banks of Newfoundland on the 7th, with pressure below 29.70 (754), whence it passed north of the region of observation by the 8th. The storm which was central over the Gulf of Saint Lawrence on the 5th and 6th probably moved southeastward and united with this storm. On the 7th a storm was central off Ireland, whence it apparently moved southeast and disappeared over France by the 9th. On the 10th a storm was central about midway between the Azores and the Grand Banks, where it remained nearly stationary until the 12th, after which it disappeared.

On the 11th a storm of slight energy was central north of the Bahamas, from which position it moved north of east and on the 12th was central west of Bermuda, where the pressure fell to 29.73 (755). Moving thence northeast the storm was central south of Nova Scotia on the 13th, off east Nova Scotia on the 14th, and by the 15th had disappeared north of the region of observation. On the 14th and 15th a storm of moderate energy was central off the south Atlantic coast; on the 16th it was off the middle Atlantic coast, and by the 17th had advanced to New Brunswick, after which it passed northeast over the Gulf of Saint Lawrence and disappeared north of the region of observation. On the 15th a storm was apparently central over the North Sea. From the 17th to 24th the pressure continued low over and near the British Isles, and on the 23d and 24th a storm apparently moved eastward from west of Ireland. From the 22d to 24th a storm of moderate strength moved from the Gulf of Saint Lawrence to the north edge of the Grand Banks, after which it passed north of the region of observation. From the 26th to the close of the month the pressure continued low over the British Isles and the ocean to the westward. On the 26th and 27th a storm passed over the Gulf of Saint Lawrence and thence north of Newfoundland. On the 28th a storm of slight energy was central over the east part of the Gulf of Mexico, and on the 31st a storm was central over the Banks of Newfoundland.

FOG IN MAY.

The limits of fog-belts west of the 40th meridian, as determined from reports of shipmasters, are shown on Chart I by dotted shading. Near the Banks of Newfoundland fog was reported on 12 dates; between the 55th and 65th meridians on 11 dates; and west of the 65th meridian on 8 dates. Compared with the corresponding month of the last 3 years the dates of occurrence of fog near the Grand Banks numbered 8 less than the average; between the 55th and 65th meridians 4 less than the average; and west of the 65th meridian 12 less than the average. On the dates fog was reported in the regions referred to it occurred with the approach or passage of general storms.

OCEAN ICE IN MAY.

The following table shows the southern and eastern limits of the region within which icebergs or field ice were reported for May during the last 9 years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
	° ′	° ′		° ′	° ′
May, 1883	40 30	47 00	May, 1883	45 40	45 12
May, 1884	41 30	47 30	May, 1884	43 30	44 50
May, 1885	40 50	48 15	May, 1885	42 30	40 10
May, 1886	41 36	51 30	May, 1886	48 55	46 13
May, 1887	39 38	46 00	May, 1887	39 38	46 00
May, 1888	41 00	46 00	May, 1888	41 00	46 00
May, 1889	43 07	55 47	May, 1889	49 46	36 48
May, 1890	40 50	50 28	May, 1890	44 12	36 25
May, 1891	40 49	49 07	May, 1891	48 00	45 00
Mean	41 06	49 04	Mean	44 48	42 58

On the 7th 3 small pieces of ice were reported in N. 49° 03′, W. 33° 40′.

The southernmost ice reported, a small berg noted on the 13th, was about one-fourth degree south, and the easternmost ice, icebergs observed on the 11th, was 2° west of the average southern and western limits of ice for the month, as determined from reports of the last 8 years. For the current month ice was most frequently reported along the east edge of the Banks of Newfoundland. During the latter half of the month icebergs were reported near the southeast Newfoundland coast. In the early part of the month field ice interfered with navigation on the Cape Breton and east Nova Scotia coasts and about the Magdalen Islands in the Gulf of Saint Lawrence. Compared with the corresponding month of preceding years the ice reported for the current month about corresponded in quantity and distribution with the May average. The limits of the region within which Arctic ice was reported for May, 1891, are shown on Chart I by ruled shading.

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

Many of the voluntary stations do not have standard thermometers or shelters.

The distribution of mean temperature over the United States and Canada for May, 1891, is exhibited on Chart II by dotted isotherms. In the table of Signal Service data the monthly mean temperature and the departure from the normal are given for regular stations of the Signal Service. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Signal Service represents the mean of the maximum and minimum temperatures.

The mean temperature was highest in the central and east parts of San Diego Co., Cal., and at stations in the middle Gila valley, where it was above 80, and the mean readings were above 70 over the south part of the east and west Gulf states, in Florida, the adjoining parts of west Arizona and southeast California, and at stations in the Sacramento and San Joaquin valleys. The mean temperature was lowest at mountain stations in central Colorado, where it was below 40, and it was below 50 in east and north New England, over the north part of the Lake region, and generally at Canadian stations east of the 105th meridian. On the southeast New England coast, and at stations on the immediate Pacific coast north of San Francisco, Cal., the mean temperature was below 55.

The mean temperature was below the normal, except in the Canadian Maritime Provinces, and within an area extending from the north Pacific coast southeastward over the middle plateau region, and thence to Lake Superior. The greatest departure below the normal temperature occurred in the middle Ohio valley, where it was more than 4, and the departure below the normal was 2 or more on the middle and south Pacific coasts and in southwest Arizona, and from the southeast slope of the Rocky Mountains eastward to the Atlantic coast states, New York City being the only station south of the Lake region where the mean temperature was above the normal. In districts where the mean temperature was above the normal the departure was less than 2, except at Chatham, N. B., and Spokane Falls, Wash., where it was 3.5 and 2.8, respectively.

On the 5th unusually cold weather prevailed east of the Missouri and Mississippi rivers, freezing weather being reported generally in the Lake region, Minnesota, and the Da-

kotas. At Detroit, Mich., the minimum temperature, 28, was 1 lower than previously reported during the first decade of May. Unusually cold weather prevailed in the regions referred to until the 7th, on which date the minimum temperature at Lynchburgh, Va., and Raleigh, N. C., 34 and 38, respectively, was the lowest on record for those stations for the first decade of May by 1 and 2. The lowest minimum temperature reported for May was noted at stations in the lower lake region on the 5th. On the 11th unusually low temperature prevailed in Kansas, and at Dodge City and Concordia the minimum temperature, 32 and 34, respectively, was about 4 below the lowest temperature on record for the second decade of May. On the 17th unusually low temperature for the season prevailed in Michigan, Ohio, West Virginia, west Pennsylvania, and west New York; at Parkersburgh, W. Va., Columbus, Ohio, Erie, Pa., Port Huron and Manistee, Mich., the minimum temperature was 2 to 4 lower than previously recorded during the second decade of May. At Lynchburgh, Va., the minimum temperature, 40, was as low as any on record for the season.

The mean temperature from January to May, inclusive, averaged about normal in the south Atlantic and east Gulf states, the Rio Grande and Missouri valleys, the Ohio Valley and Tennessee, and along the north and south Pacific coasts. In the extreme northwest the mean temperature for this period averaged about 3 above the normal; in the upper Lake region about 2 above; and in New England, the middle Atlantic states, the lower Lake region, the upper Mississippi valley, and over the northern plateau about 1 above the normal. In the southern and middle plateau regions the mean temperature was about 2 below the normal; and at Key West, Fla., in the west Gulf states, on the eastern slope of the Rocky Mountains, and on the middle Pacific coast it was about 1 below the normal.

The highest mean temperature ever reported for May occurred on the Pacific coast north of the Columbia River in 1889, when the mean temperature was 2 to 3 above the normal; over the southern plateau and southeast slope of the Rocky Mountains in 1886, when the mean temperature was 3 to 5 above the normal; in the Sacramento Valley and on the south Pacific coast in 1885, when the mean temperature was 1 to 2 above the normal; in the upper Mississippi and middle Ohio valleys in 1881, when the mean temperature was 6 to 10 above the normal; and in the Lake region, the middle Atlantic and New England states, the lower Missouri valley, Arkansas, and Tennessee in 1880, when the mean temperature was 6 to 9 above the normal in the Lake region, 6 to 7 above in the middle Atlantic and New England states, and 4 to 7 above in the lower Missouri valley, Arkansas, and Tennessee.

The lowest mean temperature ever reported for May was noted at Lynchburgh, Va., where the mean temperature was 3.5 below the normal, and 0.2 below 1873; at Wellsborough, Pa., where the mean temperature was 5.8 below the normal, and 0.1 below 1882; at Savannah, Ga., where the mean temperature was 4.0 below the normal, and 0.8 below 1882; at Jacksonville, Fla., where the mean temperature was 2.0 below the normal, and 0.8 below 1887; at Key West, Fla., where the mean was 2.8 below the normal, and 0.5 below 1887; at Grand Coteau, La., where the mean was 4.3 below the normal, and 2.8 below 1889; at Shreveport, La., where the mean was 4.1 below the normal, and 0.2 below 1882; at Abilene, Tex., where the mean was 3.0 below the normal, and 0.8 below 1888; at Indianapolis, Ind., where the mean was 3.3 below the normal, and 0.6 below 2 or more years; at Cincinnati, Ohio, where the mean was 4.9 below the normal, and 1.4 below 1882; at Yuma, Ariz., where the mean was 3.6 below the normal, and 0.2 below 1883; and at Keeler, Cal., where the mean was 2.2 below 1888. The lowest mean temperature reported for May occurred from the west part of the Lake region to the northeast slope of the Rocky Mountains in 1888, when the mean temperature was 3 to 7 below the normal; over the southeast part of the plateau region in 1884, when the mean was 3 to 4 below the normal; from the middle Atlantic states and west New England westward over the lower lake region and middle Mississippi valley, Kansas, and east Colorado in 1882, when the mean temperature was 3 to 6 below the normal in the middle Atlantic states and New England, and 3 to 7 below over the east part of the Lake region and the middle Mississippi valley, Kansas, and east Colorado.

DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for May for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for May, 1891; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for May, during the period of observation and the years of occurrence:

State and station.	County.	(1) Normal for the month of May.	(2) Length of record.	(3) Mean for May, 1891.	(4) Departure from normal.	(5) Extreme monthly mean for May.			
						Highest.	Year.	Lowest.	Year.
Arkansas.		°	Years	°	°	°		°	
Lead Hill	Boone	67.9	9	64.6	— 3.3	74.4	1886	62.9	1882
California.									
Sacramento	Sacramento	64.1	38	59.6	— 4.5	70.2	1865	58.5	1860
Connecticut.									
Middletown	Middlesex	57.1	24	56.4	— 0.7	61.3	1864	52.4	1861
Florida.									
Merritt's Island	Brevard	75.4	9	75.4	0.0	79.2	1884	70.3	1886
Georgia.									
Forsyth	Monroe	72.7	17	72.0	— 0.7	75.8	1880	69.2	1877
Illinois.									
Peoria	Peoria	64.5	35	62.0	— 2.5	71.4	1881	55.2	1867
Riley	McHenry	57.2	35	55.3	— 1.9	64.4	1881	49.8	1867
Indiana.									
Vevay	Switzerland	65.1	24	61.4	— 3.7	71.2	1880	60.4	1867
Iowa.									
Cresco	Howard	56.4	19	56.1	— 0.3	64.1	1881	49.9	1888
Monticello	Jones	59.4	37	58.0	— 1.4	68.1	1881	51.8	1867
Logan	Harrison	62.1	17	61.2	— 0.9	71.3	1880	56.1	1878
Kansas.									
Lawrence	Douglas	65.0	29	61.2	— 3.8	70.6	1880	55.5	1867
Wellington	Sumner	65.1	12	66.9	+ 1.8	71.1	1880	58.2	1882
Louisiana.									
Grand Coteau	Saint Landry	74.7	8	70.4	— 4.3	75.7	1884	70.4	1891
Maine.									
Orono	Penobscot	51.7	21	51.2	— 0.5	55.9	1887	41.8	1884
Maryland.									
Cumberland	Allegany	60.0	28	60.9	+ 0.9	67.0	1880	51.1	1866
Massachusetts.									
Amherst	Hampshire	57.1	55	55.8	— 1.3	64.2	1880	49.8	1837
Newburyport	Essex	55.5	12	54.8	— 0.7	61.0	1880	50.2	1882
Somerset	Bristol	58.5	18	58.7	+ 0.2	63.6	1880	51.7	1882
Michigan.									
Kalamazoo	Kalamazoo	57.5	14	57.0	— 0.5	66.0	1881	41.3	1882
Thornville	Lapeer	57.5	14	56.1	— 1.4	66.6	1880	46.9	1877
Minnesota.									
Minneapolis	Hennepin	57.1	26	58.8	+ 1.7	63.4	1887	47.9	1867
Montana.									
Fort Shaw	Lewis & Clarke	54.2	22	53.4	— 0.8	59.8	1869	47.4	1883
New Hampshire.									
Hanover	Grafton	54.4	56	53.0	— 1.4	62.0	1880	48.7	1850
New Jersey.									
Moorestown	Burlington	60.6	27	59.3	— 1.3	68.0	1880	54.4	1882
South Orange	Essex	60.5	19	57.8	— 2.7	66.4	1880	57.3	1885
New York.									
Cooperstown	Otsego	54.6	37	51.9	— 2.7	60.7	1880, '87	46.7	1861
Palermo	Oswego	54.8	37	53.3	— 1.5	60.9	1887	47.5	1867
North Carolina.									
Lenoir	Caldwell	62.6	18	62.6	0.0	67.8	1887	48.0	1881
Ohio.									
N'th Lewisburgh	Champaign	61.4	59	58.8	— 2.6	68.0	1887	53.0	1838
Wauseon	Fulton	58.7	21	56.5	— 2.2	64.3	1880	52.2	1882
Oregon.									
Albany	Linn	53.8	14	57.4	+ 3.6	61.4	1890	52.4	1880
Eola	Polk	54.2	21	55.2	+ 1.0	59.1	1888	45.2	1880
Pennsylvania.									
Dyberry	Wayne	54.4	24	52.0	— 2.4	64.1	1880	43.7	1865
Grampian Hills	Clearfield	56.5	26	56.1	— 0.4	65.1	1887	48.8	1867
Wellsborough	Tioga	56.2	12	50.4	— 5.8	68.4	1879	50.4	1891
South Carolina.									
Statesburgh	Sumter	70.3	10	68.1	— 2.2	73.8	1881	65.9	1885
Tennessee.									
Austin	Wilson	69.2	22	65.4	— 3.8	79.2	1887	64.5	1877
Texas.									
New Ulm	Austin	74.4	18	73.0	— 1.4	77.4	1879	72.0	1885
Vermont.									
Strafford	Orange	55.7	18	53.8	— 1.9	63.0	1887	50.5	1882
Virginia.									
Birdsnest	Northampt'n	65.2	23	63.0	— 2.2	73.7	1880	60.8	1869
Washington.									
Fort Townsend	Jefferson	54.0	19	54.4	+ 0.4	57.0	1889	50.2	1880
Wisconsin.									
Madison	Dane	56.5	22	56.0	— 0.5	64.2	1870	51.5	1883

MAXIMUM AND MINIMUM TEMPERATURES.

The maximum temperature was highest in adjoining parts

of west Arizona and southeast California, where it was above 100, and the temperature rose above 90 in the Sacramento, San Joaquin, and Gila valleys, in southeast Washington, in the Dakotas, east Montana, central Nebraska, west Minnesota, in the Rio Grande Valley, and generally in the east Gulf and south Atlantic states. The maximum temperature was lowest at stations along the immediate Pacific and east and southeast New England coasts, where it was below 70. At Bismarck, N. Dak., the maximum temperature, 93, was 1 higher than previously reported for May. The reports of United States Army post surgeons and voluntary observers show the following maximum temperatures in states and territories where temperature rising to or above 90 was reported: Volcano Springs, Cal., 110; Texas Hill, Ariz., and Glendive, Mont., 108; Clark, S. Dak., and Americus, Ga., 102; Moab, Utah, 101; Fort Ringgold and Sierra Blanca, Tex., Columbus (2), Miss., and Bassett and Long Pine, Nebr., 100; Wiggins, Ala., 99; Fenelon, Nev., 98; Weston, Oregon, Harriman, Tenn., Fort Fetterman, Wyo., and Lead Hill., Ark., 97; Deming, N. Mex., and Nottoway C. H., Va., 96; Chapel Hill, N. C., Ellendale, N. Dak., Blackville, S. C., Fort Barrancas, Fla., several stations in Kansas, and Cheneyville, La., 95; Placerville, Idaho, Glenwood (1), Iowa, and Crookston, Minn., 94; Portsmouth (2), Ohio, Lamar, Colo., Carlisle and McConnellsburgh, Pa., McLeansborough, Ill., and Oak Ridge, Mo., 93; several stations in New Jersey, Westborough, Mass., and Fort Simcoe, Wash., 92; Cumberland (2), Md., 91; Nashua and Plymouth, N. H., several stations in New York, Brattleborough (1), Vt., Westfield, Wis., Rockville, Ind., Fort Supply, Ind. T., and several stations in Kentucky, 90.

The lowest temperature reported by a regular station of the Signal Service was 15 at Fort McKinney, Wyo., and the temperature fell below 20 in north North Dakota and northwest Minnesota. The minimum temperature was below 30 over the northern part of the country from north New England and the Saint Lawrence Valley to east Washington and Oregon, and southward over the east part of the plateau region to north-central New Mexico. The highest minimum temperature occurred along the immediate west Gulf coast and over south Florida, where it was above 60. At the following-named stations of the Signal Service the minimum temperature was as low or lower than previously reported for May: Eastport, Me., 32, the same as 1888; New London, Conn., 31, 1 below 2 more years; Philadelphia, Pa., 36, the same as 1880; Atlantic City, N. J., 33, the same as 2 or more years; Lynchburgh, Va., 34, 3 below 1876; Charlotte, N. C., 38, the same as 1889; Augusta, Ga., 42, the same as 1877; New Orleans, La., 53, 1 below 1889; Palestine, Tex., 46, the same as 1887; Columbus, Ohio, 34, the same as 1883; Buffalo, N. Y., 28, 1 below 1876; Detroit, Mich., 29, the same as 1875; Dodge City, Kans., 32, the same as 1884; Bismarck, N. Dak., 20, the same as 1888; Fort Buford, N. Dak., 17, 3 below 1885; Keeler, Cal., 36, the same as 1889, and Neah Bay, Wash., 33, the same as 1889. The reports of United States Army post surgeons and voluntary observers show the following minimum temperatures in states and territories where minimum temperature falling to or below 32 was reported: Breckenridge, Colo., 1; Hayward, Wis., Camp Poplar River, Mont., Leech Lake and Pokegama Falls, Minn., and Fort Pembina, N. Dak., 15; Silver Lake, Oregon, 16; Evart and Gaylord, Mich., 17; Plattsburgh Barracks, N. Y., 19; Dyberry, Pa., Fort Meade, S. Dak., Bonanza and Placerville, Idaho, and Fort Niobrara, Nebr., 20; Eureka, Nev., Fort D. A. Russell, Wyo., and Indianola, Iowa, 21; Franklin, N. C., Garrettsville, Ohio, and Ludlow (1), Mass., 22; Berlin Falls, N. H., East Berkshire, Vt., and Valparaiso, Ind., 23; Allaire, N. J., Sterling, Kans., and Fairfield and Mayfield, Me., 24; Nephi, Utah, 26; Fort Adams, R. I., Lexington and Marion, Va., Cooley's, Ariz., Cisco, Cal., Canton, Conn., and Centreville, Mo., 27; Estalina Springs and Monero, N. Mex., and several stations in Illinois, 28; Waterville, Wash., and Caddo and Harrodsburgh, Ky., 29; Springdale, Tenn., Weatherford, Tex., and Alderson and Pleasant Hill, W. Va., 30; Dover, Del., 32.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart IV by a line traced from the Maine coast westward over the south part of the Lake region, south Wisconsin, and south Minnesota, thence southwest to central Colorado, thence south to north-central New Mexico, and thence to north Nevada, and the western limit of freezing weather is shown by this line continued northward over Oregon and east Washington.

RANGES OF TEMPERATURE.

The greatest and least daily ranges of temperature are given in the table of Signal Service data. The greatest monthly ranges occurred in North Dakota, northwest Minnesota, and east Montana, where they exceeded 70°, whence they decreased eastward to the east and southeast New England coasts, where they were less than 40, southeastward to less than 30 at Hatteras, N. C., and to less than 20 at Key West, Fla., southward to less than 30 on the immediate west Gulf coast, southwestward to less than 20 at San Diego, Cal., and westward to less than 30 along the immediate middle and north Pacific coasts.

FROST.

The following reports of frost injurious to vegetation have been made by regular and voluntary observers of the Signal Service: On the 3d frost killed tender vegetation at Huron, S. Dak. At Grand Haven, Mich., the frost of the 3d, 5th, 6th, and 7th injured peaches and strawberries on low land. On the 4th frost killed fruit blossoms at Garrettsville, Ohio, Holland, Mich., and South Bend, Ind. At Beverly, N. J., the frost of the 4th and the 6th injured strawberries. On the 5th severe frost occurred from Maine westward to the Dakotas, causing damage to crops and fruit. From the 5th to the 7th killing frost occurred throughout the Lake region, the Ohio, upper Mississippi, and Missouri valleys, and as far south as North Carolina and southern Tennessee. On the 6th frost damaged fruit at Southington, Conn. Frost was also reported on this date at Fall River, Mass., and in New Jersey and Connecticut. On the 7th frost injured tender vegetation at University, Miss. On the 10th frost killed tender plants at Taylor's Ranch, Utah, and caused damage to wheat, garden vegetables, and fruit at Salina, Kans. On the 11th frost injured small fruit and vines at points in Kansas and Nebraska. On the 13th frost injured fruit at Downs, Kans. Killing frost was reported at Huron, S. Dak., and Hudson, Mich., on the 16th. On the 17th killing frost occurred throughout Michigan and generally in central and northern Ohio, where serious damage was caused to tender plants and fruit. Killing frost was also reported on this date in parts of Iowa, west Pennsylvania, central New York, southern Maine, and West Virginia. On the 19th heavy frost occurred in many localities in Maine, New Hampshire, and central Massachusetts; and light frost caused slight damage at Rocky Ford, Colo. On the 21st garden vegetables were injured at Bangor, S. Dak. Frost killed vegetables at Farmington, Me., on the 23d. On the 27th killing frost occurred in western and central New York, at Grampian Hills and Wellsborough, Pa., and at points in Ohio and Illinois.

Compared with the preceding month the southern limit of frost in the Atlantic coast states was 5° to 6° farther north; in the east Gulf states 2° to 3° farther north; and in the west Gulf states 5° to 6° farther north. In the plateau region frost occurred in the mountains of Arizona and at Carson City, Nev., for each month. In California frost was reported as far south as Keeler in April, while for the current month no frost was reported on the Pacific coast south of the 42d parallel.

East of the Mississippi River and in Arkansas frost occurred over the northern half of the east Gulf states on the 7th and 8th. It was noted in southern Kansas on the 11th; at Santa Fé, N. Mex., on the 5th and 15th; in the mountains of central Arizona on a number of dates, and in west Washington and Oregon on the 8th and 9th.

Compared with the average date of last killing frost the frost of the 5th to 7th in North Carolina and of the 7th in

north Mississippi was about 7 weeks later than usual; that of the 5th to 7th in Tennessee was about 5 weeks late; that of the 13th in Kansas, of the 17th in West Virginia, and of the 27th in Ohio and New York was about 4 weeks late; and that of the 11th in Nebraska and of the 17th in Michigan and Iowa was about 2 weeks late.

NORMAL TEMPERATURE FOR MAY.

The normal distribution of temperature in the United States for May is shown by Chart No. V. The data used in the preparation of the chart were supplied largely by the records of observations at Signal Service stations for the twenty years—1871 to 1890. On this chart are given in plain figures the temperature as read at Signal Service stations at some elevation above the sea; underscored figures indicate temperatures observed at voluntary stations.

The instruments and methods employed during those years were substantially uniform at all stations, and the results for Signal Service stations, while not strictly comparable, owing to differences of exposure, are yet deemed fairly satisfactory. The hours of observation were changed a number of times and the method of obtaining the mean was not always the same. In order, therefore, to determine the error of a twenty-year mean derived from a combination of different hours, it was decided to reduce the 20-year value for 12 representative stations to the equivalent of a 20-year homogeneous series of observations. Mr. Alexander McAdie was charged with these reductions. He selected the following stations: New Orleans, La.; Washington City; Omaha, Nebr.; Saint Louis, Mo.; Saint Paul, Minn.; Philadelphia, Pa.; Boston, Mass.; Cleveland, Ohio; Milwaukee, Wis., and Cheyenne, Wyo. He first obtained the curve of diurnal variation for each station, as elsewhere described (see explanation of "Decade Normal Temperature Charts," O. C. S. O., June 15, 1891), and drew therefrom the appropriate corrections to reduce the mean of any hour, or combinations of hours, to the true mean.

It was found that the errors of the several combinations of hours very nearly neutralized each other, thus at New Orleans, La., for January the error of—

Series No. 1, Nov., 1870, to Aug., 1872, was —0°.2;
Series No. 2, Aug., 1872, to Oct., 1879, was 0°.0;
Series No. 3, Nov., 1879, to Dec., 1884, was 0°.0;
Series No. 4, Jan., 1885, to Dec., 1886, was 0°.0;
Series No. 5, Jan., 1887, to Jan., 1888, was +0°.3;
Series No. 6, July, 1888, to Dec., 1891, was —0°.2.

Having found for each month and a number of localities the corrections necessary to reduce the non-homogeneous mean to a homogeneous mean, it was clearly shown that the two were almost identical, and that no appreciable error would obtain in drawing isothermal lines from the unreduced means. The data were, therefore, charted without applying any corrections whatever.

A number of records made by reliable voluntary observers and U. S. Army surgeons were used in portions of the country not covered by Signal Service observations. The hours of observation at these stations were, as a rule, 7 a. m., 2 and 9 p. m. No corrections to reduce the means so obtained to the true mean have been applied. While these charts leave something to be desired in accuracy and completeness, they are desirable and important contributions at this time.

Table of normal temperature for May—Signal Service stations.

Stations.	Length of record.	Normal.	Stations.	Length of record.	Normal.
	Years	°		Years	°
Albany, N. Y.	17	59.3	Lynchburgh, Va.	19	66.3
Alpena, Mich	18	48.8	Marquette, Mich.	20	49.3
Atlanta, Ga.	12	68.6	Memphis, Tenn.	20	70.6
Atlantic City, N. J.	17	57.1	Milwaukee, Wis.	20	53.0
Augusta, Ga.	19	72.5	Mobile, Ala	20	73.8
Baltimore, Md.	20	64.4	Montgomery, Ala.	18	73.0
Bismarck, N. Dak.	16	54.6	Morgantown, W. Va.	11	62.6
Boise City, Idaho	24	59.8	Nashville, Tenn	20	68.8
Boston, Mass.	20	56.3	New Haven, Conn.	18	57.8
Brownsville, Tex.	16	78.5	New London, Conn	20	56.4
Buffalo, N. Y.	20	53.9	New Orleans, La.	20	74.7
Buford, Fort, N. Dak.	12	54.9	New York City	20	59.3
Cairo, Ill	20	67.8	Norfolk, Va.	20	66.6
Charleston, S.C.	20	72.7	North Platte, Nebr	16	58.4
Charlotte, N.C.	12	68.9	Olympia, Wash	18	55.6
Chattanooga, Tenn.	12	68.2	Omaha, Nebr.	20	62.1
Cheyenne, Wyo.	20	50.8	Oswego, N. Y	20	54.4
Chicago, Ill	30	56.4	Pensacola, Fla	10	73.8
Cincinnati, Ohio.	20	65.2	Philadelphia, Pa.	20	62.2
Cleveland, Ohio.	20	58.0	Pittsburg, Pa	20	62.4
Columbus, Ohio	12	61.4	Portland, Me.	20	55.4
Davenport, Iowa.	19	61.1	Portland, Oregon.	20	57.2
Denver, Colo.	19	56.5	Prescott, Ariz.	14	60.2
Des Moines, Iowa.	12	61.1	Red Bluff, Cal.	13	67.1
Detroit, Mich.	20	57.7	Rochester, N. Y.	20	56.4
Dodge City, Kans.	16	63.1	Roseburgh, Oregon.	14	56.9
Dubuque, Iowa	18	60.3	Sacramento, Cal.	14	64.0
Duluth, Minn.	20	48.3	Saint Louis, Mo.	20	66.0
Eastport, Me	18	47.4	Saint Paul, Minn.	20	57.9
El Paso, Tex.	12	73.7	Saint Vincent, Minn.	11	52.0
Erie, Pa.	18	57.2	Salt Lake City, Utah.	17	58.0
Escanaba, Mich.	20	49.1	San Diego, Cal	20	61.2
Galveston, Tex	20	76.0	Sandusky, Ohio.	14	59.4
Grand Haven, Mich.	20	54.9	San Francisco, Cal.	20	56.7
Indianapolis, Ind.	20	63.7	Santa Fe, N. Mex.	20	57.2
Jacksonville, Fla.	19	75.1	Savannah, Ga.	20	73.5
Keokuk, Iowa.	19	62.9	Shreveport, La.	20	73.4
Key West, Fla.	20	79.6	Toledo, Ohio.	20	59.9
Knoxville, Tenn.	20	66.4	Vicksburg, Miss.	19	73.0
La Crosse, Wis	18	59.7	Washington City.	20	64.2
Leavenworth, Kans.	20	64.7	Wilmington, N. C.	20	69.9
Los Angeles, Cal.	14	62.2	Yankton, S. Dak	18	59.2
Louisville, Ky.	19	66.9	Yuma, Ariz.	13	77.4

Signal Service, post hospital, voluntary, and stations of the Canadian meteorological service.

Stations.	Length of record.	Normal.	Stations.	Length of record.	Normal.
	Years	°		Years	°
Amherst, Mass.	53	56.9	Lenoir, N. C.	19	63.7
Astoria, Oregon.	26	52.8	Lunenburgh, Vt.	40	52.8
Austin, Tex.	35	74.2	Marietta, Ohio.	57	62.4
Bidwell, Fort, Cal	23	55.1	McDowell, Fort, Ariz.	24	78.2
Bowie, Fort, Ariz.	22	71.1	McIntosh, Fort, Tex.	23	81.6
Brady, Fort, Mich.	51	49.8	Mohave, Fort, Ariz	26	80.4
Bridger, Fort, Wyo.	27	49.6	Monterey, Cal.	26	58.0
Brooke, Fort, Fla.	31	74.6	Montreal, Quebec.	56	55.2
Burlington, Vt.	49	55.8	North Lewisburgh, Ohio.	59	61.4
Canton, N. Y.	27	56.8	Northport, Mich.	18	51.9
Chatham, N. B.	16	48.3	Parry Sound, Ont.	15	50.8
Clark, Fort, Tex.	18	77.3	Peoria, Ill.	35	63.8
Colville, Fort, Wash.	18	55.5	Promontory, Utah.	19	58.2
Cooperstown, N. Y.	34	54.5	Quebec, Quebec.	44	50.2
Craig, Fort, N. Mex.	21	70.1	Randall, Fort, S. Dak.	20	61.2
Danville, Ky	18	65.9	Ripley, Fort, Minn.	27	55.5
Davis, Fort, Tex.	20	70.9	Rockliffe, Ont.	14	51.6
Eagle Pass, Tex.	22	80.0	San Antonio, Tex.	24	76.9
Father Point, Quebec.	14	43.5	Saugeen, Ont.	16	50.2
Fort Smith, Ark.	25	69.1	Shaw, Fort, Mont.	22	54.1
Gaston, Fort, Cal	27	60.3	Sill, Fort, Oklahoma T.	20	70.1
Gibson, Fort, Ind. T.	46	69.6	Stanton, Fort, N. Mex.	13	60.6
Grampian Hills, Pa.	26	56.4	Sydney, C. B. I.	21	44.9
Grant, Fort, Ariz.	24	70.4	Toronto, Ont	51	52.1
Green Springs, Ala.	28	70.6	Totten, Fort, N. Dak	21	53.7
Halifax, N. S.	39	47.8	Truckee, Cal.	20	48.8
Harrisburg, Pa.	32	63.9	Union, Fort, N. Mex.	37	57.9
Howard, Fort, Wis.	22	55.7	Washington, Ark.	22	69.8
Humboldt, Nev.	20	55.8	Wingate, Fort, N. Mex.	27	60.1
Indianola, Tex.	15	76.1	Winnipeg, Man	22	52.2
Kingston, Ont	21	53.4	Wytheville, Va.	25	61.4
Klamath, Fort, Oregon.	19	49.1	Yarmouth, N. S.	14	47.2
Lansing, Mich	27	58.7	Yuma, Fort, Ariz.	25	79.6
Lapwai, Fort, Idaho.	20	60.3			

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for May, 1891, as determined from the reports of nearly 2,000 stations, is exhibited on Chart III. In the table of Signal Service data the total precipitation and the departure from the normal are given for each Signal Service station. The figures opposite the names of the geographical districts in

the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

The heaviest precipitation reported was 11.08, at Southern Pines, N. C., and 10.25 was reported at Kellogg, Kans. The monthly precipitation exceeded 8.00 in areas in North Carolina, Kansas, and northeast Colorado, and was more than 6.00 in south-central Virginia, over the greater part of North Carolina, in areas on the east Florida coast, in central Mississippi, northwest Missouri, a great part of Kansas, and at stations in north-central and northeast Colorado. At a number of stations in southeast and central California and southwest Arizona no precipitation was reported, and over the greater part of the southern plateau, generally in California south of the 40th parallel, over east Washington and northeast Oregon, in east-central Wyoming, east-central South Dakota, along a greater part of the middle and west Gulf and west Florida coasts, and in areas in the middle Missouri valley, the Ohio Valley and Tennessee, the east and west Gulf states, the north part of the Lake region, and from central New York to north-central Pennsylvania, less than 1.00 was reported.

East of the Rocky Mountains the precipitation was generally deficient, while over the Rocky Mountain, the middle and southern plateau regions, and on the Pacific coast between the 35th and 45th parallels the monthly precipitation was in excess of the May average. Over the eastern part of the country the only important area of excessive precipitation extended from central Virginia over the interior of the south Atlantic states, where the precipitation was more than 2.00 above the normal. There was also an excess of 2.00 at Roseburgh, Oregon. The greatest deficiency in precipitation occurred from the west Gulf coast to the Lake region, where it was generally more than 2.00, and the deficiency exceeded 4.00 over south Louisiana and Texas.

Considered by districts the average percentage of the normal in districts where the precipitation was in excess was about as follows: southern plateau, 349 per cent.; middle plateau, 137 per cent.; northeast slope of the Rocky Mountains and middle Pacific coast, 124 per cent.; middle-eastern slope of the Rocky Mountains, 106 per cent. In districts where the precipitation was deficient the percentage of the normal was about as follows: Key West, Fla., 7 per cent.; west Gulf states, 33 per cent.; upper lake region, 37 per cent.; east Gulf states, 39 per cent.; lower lake region, 44 per cent.; northern plateau, 47 per cent.; Ohio Valley and Tennessee, 48 per cent.; upper Mississippi valley, 55 per cent.; New England, 56 per cent.; south Pacific coast, 64 per cent.; north Pacific coast, 68 per cent.; Rio Grande Valley, 70 per cent.; Missouri Valley, 78 per cent.; extreme northwest, 79 per cent.; southeast slope of the Rocky Mountains, 87 per cent.; middle Atlantic states, 90 per cent.; south Atlantic states, 95 per cent.

At the following-named stations the precipitation for the current month was the heaviest ever reported for May: Santa Fé, N. Mex., 3.21, 2.41 above the normal, and 0.90 greater than in 1881; Fort Grant, Ariz., 1.40, 1.12 above the normal, and 0.24 greater than in 1883; Winnemucca, Nev., 2.32, 1.54 above the normal, and 0.43 greater than in 1883; Fort Assiniboine, Mont., 3.79, 2.38 above the normal, and 0.64 greater than in 1889. The heaviest precipitation for May occurred in West Washington in 1887, when the excess was 1.00 to 3.00; in the lower Rio Grande valley in 1885, when the excess was 4.00 to 7.00; at stations from Iowa over the south part of the Lake region to central New York in 1883, when the excess was 2.00 to 6.00; from east Arkansas over the middle Mississippi and Ohio valleys in 1882, when the excess was 4.00 to 5.00; from New Mexico to extreme southeast South Dakota in 1881, when the excess was more than 1.00 in New Mexico and 5.00 to 9.00 in parts of South Dakota, Nebraska, and Kansas; in west Oregon and at San Francisco, Cal., in 1879, when the excess was 3.00 to 4.00 in west Oregon and 1.77 at San Francisco.

At the following-named stations the precipitation for the current month was the least ever reported for May: Eastport, Me., 1.64, 2.59 below the normal, and 0.65 less than in 1889; Grampian Hills, Pa., 1.29, 3.05 below the normal, and 0.29 less than in 1866; Wellsborough, Pa., 1.30, 4.06 below the normal, and 0.21 less than in 1886; Wilmington, N. C., 1.03, 3.32 below the normal, and 0.15 less than in 1886; Mobile, Ala., 0.67, 3.97 below the normal, and 0.50 less than in 1886; Lead Hill, Ark., 1.97, 4.40 below the normal, and 0.07 less than in 1886; Cincinnati, Ohio, 1.08, 2.41 below the normal, and 0.17 less than in 1876; Rochester, N. Y., 1.12, 1.96 below the normal, and 0.05 less than in 1887; Thornville, Mich., 1.10, 2.47 below the normal, and 0.27 less than in 1881; Marquette, Mich., 0.21, 2.58 below the normal, and 0.63 less than in 1877; Moorhead, Minn., 1.03, 1.58 below the normal, and 0.39 less than in 1890; Fort Townsend, Wash., 0.30, 1.64 below the normal, and 0.37 less than in 1888; and Neah Bay, Wash., 0.91, 3.58 below the normal, and 0.76 less than in 1888.

In the southern plateau region, where the rainfall was unusually heavy for the current month, an entire absence of precipitation is not uncommon in May. At El Paso, Tex., 11 years' record, there have been 3 years for which no precipitation was reported for May; at Fort Apache, Ariz., 12 years' record, 4 years; at Fort Grant, Ariz., 13 years' record, 3 years; at Yuma, Ariz., 15 years' record, 10 years; and at Keeler, Cal., 6 years' record, 2 years. The least precipitation for May occurred on the north Pacific coast in 1888, when the deficiency was 2.00 to 4.00; from east Texas and Louisiana northwestward to the northern plateau region in 1886, when the deficiency was 4.00 to 6.00 in Arkansas, east Texas, and west Louisiana, 3.00 to 4.00 on the southeast slope of the Rocky Mountains, and 0.50 to 1.75 in the middle and northern plateau regions; over the northeast part of the Lake region in 1877, when the deficiency was 2.00 to 3.00; and in the lower Mississippi and lower Missouri valleys in 1874, when the deficiency was 3.00 to 5.00.

The precipitation from January to May, inclusive, averaged about as follows: in New England, the Ohio Valley and Tennessee, the Rio Grande Valley, the Missouri Valley, on the southeast slope of the Rocky Mountains, and on the middle and south Pacific coasts it was about normal; on the northeast and middle-eastern slopes of the Rocky Mountains it was about one-third greater, and in the middle Atlantic states, extreme northwest, and over the middle plateau region it was one-tenth to two-tenths greater than usual. At Key West, Fla., about one-half the usual amount of precipitation fell, and in the south Atlantic and east and west Gulf states, the Lake region, the upper Mississippi valley, the northern plateau region, and on the north Pacific coast seven-tenths to nine-tenths of the average precipitation for the period named was reported.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for May for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for May, 1891; (4) the departure of the current month from the average; (5) and the extremes for May during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of May.	(2) Length of record.	(3) Total for May, 1891.	(4) Departure from average.	(5) Extremes for May.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches.*		*Inches*	
Lead Hill	Boone	6.37	9	1.97	−4.40	10.56	1882	1.97	1891
California.									
Sacramento	Sacramento	0.76	41	0.66	−0.10	3.65	1889	0.00	*
Connecticut.									
Middletown	Middlesex	3.85	29	1.62	−2.23	7.63	1868	0.22	1887

Deviations from average precipitation—Continued.

State and station.	County.	(1) Average for the month of May.	(2) Length of record.	(3) Total for May, 1891.	(4) Departure from average.	(5) Extremes for May. Greatest. Am't.	Greatest. Year.	Least. Am't.	Least. Year.
		Inches	Inches	Years	Inches.	Inches.		Inches	
Florida.									
Merritt's Island	Brevard	4.23	13	1.63	−2.60	11.58	1890	0.88	1886
Georgia.									
Forsyth	Monroe	3.18	17	2.29	−0.89	7.31	1890	0.45	1877
Illinois.									
Peoria	Peoria	3.76	35	1.97	−1.79	10.73	1858	0.93	1879
Riley	McHenry	3.80	40	4.38	+0.58	15.46	1851	0.54	1870
Indiana.									
Logansport	Cass	5.06	16	2.67	−2.39	11.13	1858	2.09	1881
Vevay	Switzerland	3.93	26	2.59	−1.34	11.80	1865	0.52	1874
Iowa.									
Cresco	Howard	3.57	19	1.58	−1.99	7.89	1880	0.76	1874
Monticello	Jones	3.62	30	2.70	−0.92	7.97	1858	0.76	1874
Logan	Harrison	4.49	25	3.93	−0.56	11.00	1877	1.10	1874
Kansas.									
Lawrence	Douglas	4.29	25	6.55	+2.26	8.27	1889	0.12	1887
Wellington	Sumner	4.60	12	8.90	+4.30	9.37	1881	0.88	1886
Louisiana.									
Grand Coteau	St. Landry	5.54	8	1.20	−4.34	14.03	1884	0.21	1889
Maine.									
Orono	Penobscot	3.60	21	2.83	−0.77	10.52	1890	1.25	1887
Maryland.									
Cumberland	Allegany	3.26	19	2.57	−0.69	7.13	1890	0.30	1875
Massachusetts.									
Amherst	Hampshire	3.91	55	1.81	−2.10	8.72	1850	0.75	1887
Newburyport	Essex	3.91	12	2.39	−1.52	6.08	1890	0.43	1880
Somerset	Bristol	3.71	18	2.09	−1.62	5.81	1890	1.08	1880
Michigan.									
Kalamazoo	Kalamazoo	4.14	15	3.06	−1.08	6.38	1883	1.44	1885
Thornville	Lapeer	3.57	14	1.10	−2.47	5.87	1890	1.10	1891
Minnesota.									
Minneapolis	Hennepin	3.47	25	1.54	−1.93	6.21	1879, '88	0.07	1866
Montana.									
Fort Shaw	LewisaClarke	1.97	21	3.40	+1.43	7.19	1876	0.36	1872
New Hampshire.									
Hanover	Grafton	3.21	45	1.90	−1.31	7.37	1850	0.55	1852
New Jersey.									
Moorestown	Burlington	3.87	27	2.33	−1.54	7.38	1867	0.65	1880
South Orange	Essex	3.12	20	3.54	+0.42	6.46	1888	0.41	1880
New York.									
Cooperstown	Otsego	3.46	37	2.16	−1.30	8.84	1890	0.36	1879
Palermo	Oswego	2.68	37	0.44?	−2.24	6.90	1867	0.30	1870
North Carolina.									
Lenoir	Caldwell	4.75	19	5.10	+0.35	11.50	1873	1.60	'81,'83
Ohio.									
N. Lewisburgh	Champaign	3.80	19	3.50	−0.30	7.95	1882	1.55	1879
Wauseon	Fulton	4.21	19	1.49	−2.72	8.22	1889	1.14	1877
Oregon.									
Albany	Linn	2.63	14	2.49	−0.14	5.70	1879	0.39	1884
Eola	Polk	1.91	21	2.29	+0.38	5.94	1879	0.26	1890
Pennsylvania.									
Dyberry	Wayne	3.05	21	2.27	−0.78	5.56	1890	0.36	1875
Grampian Hills	Clearfield	4.34	19	1.29	−3.05	11.60	1889	1.29	1891
Wellsborough	Tioga	5.36	12	1.30	−4.06	9.36	1884	1.30	1891
South Carolina.									
Statesburgh	Sumter	3.85	10	1.85	−2.00	6.68	1888	1.24	1882
Tennessee.									
Austin	Wilson	3.44	23	1.54	−1.90	8.40	1882	1.44	1877
Texas.									
New Ulm	Austin	2.74	18	0.66	−2.08	12.25	1884	0.05	1886
Vermont.									
Strafford	Orange	3.26	18	3.10	−0.16	7.60	1890	0.40	1877
Virginia.									
Birdsnest	Northampton	3.80	22	4.75	+0.95	7.85	1885	0.50	1879
Washington.									
Fort Townsend	Jefferson	1.94	17	0.30	−1.64	7.81	1875	0.30	1891
Wisconsin.									
Madison	Dane	3.69	23	1.42	−2.27	8.39	1858	1.09	1870

*1857, 1873, and 1885.

Table of excessive precipitation, May, 1891.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours. Amt.	Day.	Rainfall of 1 inch, or more, in one hour. Amt.	Time.	Day.
	Inches.	Inches.		Inches	h. m.	
Alabama.						
Livingston (1)				1.22	1 00	4
Livingston (2)				1.51	1 00	4
Arkansas.						
Hot Springs		3.00	18	3.00	0 50	18
California.						
Crescent		3.17	4			
Upper Mattole		5.59	5,6			
Colorado.						
Brush		3.43	15, 16			
First View		2.65	20, 21			
Kirk		3.00	16			
Lamar		3.01	25			
Las Animas		3.01	24, 25			
Sanborn		3.33	24			

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours. Amt.	Day.	Rainfall of 1 inch, or more, in one hour. Amt.	Time.	Day.
	Inches.	Inches.		Inches	h. m.	
Florida.						
Duke		2.94	29, 30			
Jacksonville				1.01	0 45	27
Jupiter		2.60	7, 8	2.20	0 40	7
Ocala		4.16	25			
Passadena		3.12	25, 26			
Pensacola				1.19	1 00	28
Georgia.						
Augusta				1.15	1 00	27
Macon				1.00	0 45	18
Point Peter				1.10	1 00	27
Illinois.						
Riley				1.88	1 10	20
Rushville		3.33	20, 21			
Indiana.						
Butlerville				1.07	0 40	22
Iowa.						
Carroll		2.50	30			
Cordova				1.23	1 00	23
Do				1.25	1 00	24
Glenwood		2.50	20, 21			
Indianola		3.30	21, 22			
Kansas.						
Bucklin		3.30	15			
Dwight		2.50	21			
Emporia		2.72	20, 21			
Globe		2.72	21			
Kellogg	10.25	3.96	20, 21			
Do		3.71	24, 25			
Lebo		3.15	25, 26			
Minneapolis		2.75	20, 21			
Morton		2.00	23			
Pauline		2.50	21			
Sharon Springs		3.00	20, 21			
Springvale		2.90	16, 17			
Do		3.30	21			
Topeka		2.58	21			
Wellington		2.54	21			
Do		3.06	25, 26			
Wichita		3.05	20, 21			
Do		3.19	24, 25			
Louisiana.						
Amité City		3.02	5			
Maryland.						
Jewell		2.50	28			
Mississippi.						
Brookhaven		3.52	19			
Hazlehurst		2.55	19			
Louisville				1.29	1 00	25
Vaiden				1.62	1 05	4
Missouri.						
Carrollton		3.28	2			
Columbia		2.63	2			
Fayette		3.24	2			
Grand Pass		2.94	21			
Gordonville				2.00	1 00	20
Kansas City				1.02	0 35	31
Oregon		2.69	31			
Platte River		2.87	2			
Sarcoxie		2.66	25, 26			
Nebraska.						
Omaha				1.14	1 00	30
North Carolina.						
Charlotte		3.00	12, 13	1.32	0 16	12
Lumberton				1.17	1 00	14
Southern Pines	11.08					
Weldon		3.05	26, 27			
Ohio.						
Bement		2.50	21			
West Milton				1.25	0 30	22
Oklahoma Territory.						
Oklahoma City				1.75	0 15	20
Oregon.						
Bandon		2.70	4			
Gooseberry				1.00	0 30	26
Pennsylvania.						
Coatesville				1.24	0 15	11
South Carolina.						
Allendale				1.13	1 00	13
Batesburgh		3.40	27			
Spartanburg		2.73	14			
South Dakota.						
Clark				2.37	2 00	30
Fort Meade		3.24		3.24	2 55	31
Tennessee.						
Jacksboro		2.83	27	1.00	0 50	26
Lewisburgh				1.01	1 00	25
Texas.						
Columbia		4.25	5			
Eagle Pass		3.35	22			
Fort Ringgold		2.66	4, 5			
Longview		2.50	18			
Rio Grande City		2.76	4, 5			
Round Rock				2.22	1 50	17
San Angelo				1.03	1 05	25

Received too late for publication in April, 1891.

Wray, Colorado		2.70	18			
Diamond, Georgia				2,00	2 00	19

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during May, 1891, for periods of five and ten minutes and one hour, as reported by regular stations of the Signal Service furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Bismarck, N. Dak.	0.15	30	0.16	30	0.43	23
Boston, Mass	0.05	16	0.10	16	0.15	16
Buffalo, N. Y.	0.05	22	0.05	22	0.10	26
Cincinnati, Ohio	0.15	22	0.25	22	0.45	22
Chicago, Ill	0.06	22	0.09	22	0.25	22
Cleveland, Ohio	0.18	21	0.27	21	0.59	21
Denver, Colo	0.05	20	0.10	20	0.32	20
Detroit, Mich	0.22	21	0.30	21	0.30	21
Dodge City, Kans	0.20	24	0.25	15	0.55	15
Duluth, Minn	0.18	20	0.22	20	0.40	20
Eastport, Me	0.03	22	0.05	22	0.18	22
Galveston, Tex*						
Jupiter, Fla	0.50	7	0.80	7	2.20	7
Kansas City, Mo	0.30	31	0.51	31	1.20	31
Key West, Fla	0.15	9	0.20	9	0.24	9
Marquette, Mich†						
Memphis, Tenn*						
New York City	0.09	29	0.15	16	0.38	29
New Orleans, La	0.10	12	0.17	12	0.52	12
Norfolk, Va	0.27	26	0.40	26	0.40	26
Philadelphia, Pa	0.05	3	0.10	3	0.22	3
Philadelphia Water Works	0.05	3	0.10	3	0.20	3
Portland, Oregon	0.05	6	0.05	6	0.15	6
Saint Louis, Mo	0.10	10	0.13	10	0.53	10
Saint Paul, Minn	0.22	31	0.38	31	0.65	31
San Diego, Cal†	0.05	21	0.05	21	0.05	21
San Francisco, Cal*						
Savannah, Ga	0.35	27	0.50	27	0.75	27
Washington City	0.15	3	0.18	3	0.30	3, 26
Wilmington, N. C.	0.10	5	0.15	5	0.20	5

* Register not working. † Less than 0.05 in 1 hour.

EXCESSIVE PRECIPITATION.

Monthly precipitation to equal or exceed 10.00 was reported at 1 station in North Carolina and at 1 station in Kansas. The greatest amount, 11.08, was noted at Southern Pines, N. C.

In the last 21 years monthly precipitation to equal or exceed 10.00 in May has been reported for 14 years in Tex.; for 10 years in Kans.; for 7 years in Iowa; for 6 years in Ark., La., Mo., and N. C.; for 5 years in Nebr.; for 4 years in Fla., Ga., Miss., S. C., and Va.; for 3 years in Ala., Ill., and Mich.; for 2 years in Colo., the Dakotas, D. C., Ind., Me., Md., Mass., N. H., Mont., N. J., N. Y., Ohio, Pa., Tenn., and Wis.; and for 1 year in Cal., Ky., Minn., and Wash. Among the heavier monthly rainfalls reported for May are: 34.85, at Melissa, Tex., in 1881; 21.95, at Melissa, Tex., in 1873; 19.85, at Northport, Mich., in 1884; 19.40, at Hudson, N. Y., in 1876; and 16.19, at Hypoluxo, Fla., in 1890.

Precipitation to equal or exceed 2.50 in 24 hours was reported for 14 stations in Kans., and on 9 dates, the 15th to 17th, 20th, 21st, and 23d to 26th; at 7 stations in Mo., and on 5 dates, the 2d, 21st, 25th, 26th, and 31st; at 6 stations in Colo., and on 6 dates, the 15th, 16th, 20th, 21st, 24th, and 25th; at 5 stations in Tex., and on 4 dates, the 4th, 5th, 18th, and 22d; at 4 stations in Fla., and on 6 dates, the 7th, 8th, 25th, 26th, 29th, and 30th; at 3 stations in Iowa, and on 4 dates, the 20th to 22d, and 30th; at 2 stations in Cal., and on 3 dates, the 4th and 5–6th; at 2 stations in Miss. on the 19th; at 2 stations in N. C., and on 4 dates, the 12–13th and 26–27th; at 2 stations in S. C., and on 2 dates, the 14th and 27th; at 1 station in Ark. on the 18th; at one station in Ill. on the 20th–21st; at 1 station in La. on the 5th; at 1 station in Md. on the 28th; at one station in Ohio on the 21st; at 1 station in Oregon on the 4th; and at one station in Tenn. on the 27th. Among the heavier rainfalls reported for this period are: 5.59, at Upper Mattole, Cal., 5–6th; and 4.25, at Columbia, Tex., 5th.

In the last 21 years precipitation to equal or exceed 2.50 in May has been reported for 18 years in Kans.; for 16 years in Tex.; for 12 years in N. C., S. C., Ill., and Ala.; for 11 years in Fla.; for 10 years in Iowa and Miss.; for 9 years in Ind. T., La., and Nebr.; for 8 years in Ark., the Dakotas, Ga., and Tenn.; for 7 years in Md. and Mich.; for 6 years in Ind., Mo., and Va.; for 5 years in Colo., Minn., and Pa.; for 4 years in Mass. and Ohio; for 3 years in Ky., Mont., R. I., and Wis.; for 2 years in Conn., N. J., and N. Y.; and for one year in Cal., Del., D. C., Me., and Vt. Among the heavier rainfalls reported for this period are: 9.92, at Columbus, Ga., 22d, 1880; 9.28, at Durham, Ark., 1st, 1876; 7.60, at Austin, Tex., 30th, 1870; 7.50, at Okalona, Miss., 4th, 1887; 7.37, at Shreveport, La., 6th, 1876; 9.00, at New Frankford, Mo., 28–29th, 1889; 6.89, at Hypoluxo, Fla., 29–30th, 1890. Over 5.00 fell at a number of stations in Pa., southwest N. Y., and north Md., 31st, 1889.

Precipitation to equal or exceed 1.00 in 1 hour was reported at 3 stations in Fla., and on 3 dates, the 7th, 27th, and 28th; at 3 stations in Ga., and on 2 dates, the 18th and 27th; at 2 stations in Iowa, and on two dates, the 22d and 24th; at 2 stations in Miss., and on 2 dates, the 4th and 25th; at 2 stations in Mo., and on 2 dates, the 20th and 31st; at 2 stations in N. C., and on 2 dates, the 12th and 14th; at 2 stations in S. Dak., and on 2 dates, the 30th and 31st; at 2 stations in Tenn., and on 2 dates, the 25th and 26th; at 2 stations in Tex., and on 2 dates, the 17th and 25th; at 1 station in Ala. on the 4th; at 1 station in Ark. on the 18th; at 1 station in Ill. on the 20th; at 1 station in Ind. on the 22d; at 1 station in Nebr. on the 30th; at 1 station in Ohio on the 22d; at 1 station in Okla. T. on the 20th; at 1 station in Oregon on the 26th; at 1 station in Pa. on the 11th; and at 1 station in S. C. on the 13th. Among the heavier rainfalls reported for this period are: 1.75 in 15 minutes, at Oklahoma City, Okla. T., 20th; 1.32 in 16 minutes, at Charlotte, N. C., 12th; 1.24 in 15 minutes, at Coatesville, Pa., 11th; 2.20 in 40 minutes, at Jupiter, Fla., 7th; and 3.00 in 50 minutes, at Hot Springs, Ark., 18th. Excessive rainfall for 5 and 10 minute periods at regular stations of the Signal Service is given in the table of "Maximum rainfall in 1 hour or less."

In the last 21 years precipitation to equal or exceed 1.00 in 1 hour has been reported for 16 years in Kans.; for 12 years in Tex.; for 11 years in Iowa; for 9 years in Nebr.; for 8 years in Fla., N. C., and S. C.; for 6 years in Ga., Md., Ohio, Pa., and Tenn.; for 4 years in the Dakotas, Ill., Ind., and Wis.; for 3 years in Ala., Ark., Ind. T., La., Miss., and Va.; for 2 years in Colo., Ky., Mass., Mich., Minn., and Mo.; and for 1 year in Ariz., Mont., and Vt. Among the heavier rainfalls reported for this period are: 1.15 in 5 minutes, at New York City, 22d, 1881; 1.20 in 10 minutes, at Mount Ida, Ark., 10th, 1882; 1.70 in 12 minutes, at Collinsville, Ill., 23d, 1888; 2.50 in 15 minutes, at Embarrass, Wis., 28th, 1881; 1.10 in 15 minutes, at Toledo, Ohio, 20th, 1880; and 1.10 in 15 minutes, at Dale Enterprise, Va., 12th, 1889.

SNOW (in inches and tenths).

Chart IV shows the depth of snowfall reported for the month. The greatest depth of snowfall reported was 39, at Alma, Colo., and the monthly snowfall exceeded 10 at a number of stations in central and south Colorado, along the line of the Central Pacific Railroad crossing the summit of the Sierra Nevada Mountains in California, and at Belmont, Nev. At Fort Sidney, Nebr., Virginia City, Nev., and Laramie, Wyo., the snowfall amounted to 5 or more. East of the Mississippi River the heaviest snowfall, 4.0, was reported at Malone, N. Y. 2.0 was reported at Corry, Pa., Littleton, N. H., and in the Chiricahua Mountains, Ariz. Trace of snowfall was reported in the Atlantic coast states to extreme south New Jersey and central Maryland. In the central valleys snow fell as far south as southeast Iowa. In the Rocky Mountain and plateau regions snow was reported to extreme north New Mexico; and heavy drifts were reported in the mountains of south Colorado. Over the west part of the plateau region no snow was reported, except in Nevada and in east California between the 38th and 40th parallels.

Snowfall was reported as follows: *Arizona.*—Chiricahua Mountains, 2. *California.*—Summit, 11; Cisco, 9; Emigrant

Gap, 7; Fort Bidwell, trace. *Colorado.*—Alma, 39; Breckenridge, 22; Ward District, 19.1; Como (near), 16; Thon and Cumbres, 12; Husted and Castle Rock, 10; Georgetown, 9; Stunner, 8.8; Dillon, 7.5; Idaho Springs, 7; Le Roy, 6.5; Kirk and Carson, 6; Red Cliff, 5.5; First View, Stanford, and Yuma, 4; Leslie and Akron, 2.5; Jefferson, 1.4; Greenhorn, and Denver, 1; Watervale, and Magnolia, 0.5; Fort Logan, 0.1; Haxtum and Sheridan Lake, trace. *Connecticut.*—New London, Canton, Falls Village, Middletown, and Wallingford, trace. *Illinois.*—Chicago and Riley, trace. *Indiana.*—Angola, 0.2. *Iowa.*—Dubuque, Fairfield, and Marshalltown, trace. *Maine.*—Calais, Lewiston, and Mayfield, trace. *Maryland.*—Baltimore, trace. *Massachusetts.*—Amherst Experiment Station (2), Fort Warren, Mount Nonotuck, Provincetown, Royalston, and Taunton (3 and 4), trace. *Michigan.*—Roscommon, 0.5; Alpena, Port Huron, Sault de Ste. Marie, Atlantic, Calumet, Mottville, and North Marshall, trace. *Minnesota.*—Alexandria, 1.5; Saint Vincent, 1?; Montevideo, trace. *Montana.*—Virginia City, 6.5; Helena, 3; Fort Assinniboine, 1; Camp Poplar River and Choteau, trace. *Nebraska.*—Fort Sidney, 8.5; Kimball, 5.5; Valentine, Fort Niobrara, Gering, and Hay Springs, trace. *Nevada.*—Belmont, 14; Palmetto, 9; Ely, 8; Austin, 6.5; Pioche, 5; Virginia City, 4.5; Eureka, 2.5; Lewer's Ranch, 1.5; Carson City, 1.2; Palisade, 1; Candelaria, Genoa, and Monitor's Ranch, trace.

New Hampshire.—Littleton, 2; Manchester, Hanover (1), Plymouth, and West Milan, trace. *New Jersey.*—Atlantic City, Moorestown, and South Orange, trace. *New Mexico.*—Monero, 0.2. *New York.*—Malone, 4; Le Roy, 3; Sherman, 2.5; Arcade (1) and Lockport, 2; South Canisteo and Brookfield, 1.5; Cooperstown, New Lisbon, and Turin, 1; Oxford, 0.9; Perry City, 0.8; Buffalo, Alfred Centre, Ithaca, and Syracuse, 0.5; Albany, New York City, Oswego, Rochester, Geneva, Honeymead Brook, Lyons, Madison Barracks, Middletown, Ogdensburgh (1), Poughkeepsie, and Watervliet Arsenal, trace. *North Dakota.*—Fort Pembina, 0.5; Bismarck, 0.3; Fort Buford and Grafton, trace. *Ohio.*—Bangorville, Garrettsville, Hiram, New Alexandria, Orangeville, and Weymouth, trace. *Oregon.*—Joseph, 0.8; Happy Valley, trace. *Pennsylvania.*—Corry, 2; Wellsborough, 1.5; Blue Knob, Dyberry, and Pleasant Mount, 1; Greenville, Selin's Grove, and Wilkesbarre, 0.5; Le Roy, 0.4; Grampian Hills and Salem Corners, 0.3; Harrisburg, Blooming Grove, Kilmer, Quakerstown, and Ridgway, trace. *Rhode Island.*—Kingston (1), trace. *South Dakota.*—Cross and Spearfish, 1.5; Fort Meade, 1.1; Wolsey and Forestburgh, 1; Huron, 0.6; Fort Sully, 0.4; De Smet and Egeland, 0.3; Rapid City, 0.2; Kimball, 0.1; Flandreau, Fort Bennett, Millbank, Parkston, and Saint Lawrence, trace. *Vermont.*—Chelsea and Strafford, 1; Brattleborough (2), Burlington, and Jacksonville, trace. *West Virginia.*—Tannery and Weston, trace. *Wisconsin.*—Hayward, trace. *Wyoming.*—Laramie, 5; Fort Washakie, 4; Cheyenne, 3.3; Fort Yellowstone, 0.5; Fort Fetterman, trace.

HAIL.

Description of the more severe hail storms of the month is given under "Local Storms." Hail was reported as follows: 1st, Md., Mo., Mont., N. C., S. Dak., Va. 2d, Colo., Kans., Ky., Mo., Nebr. 3d, Colo., Idaho, Iowa, Kans., Miss., Mo., N. C. 4th, Ala., Ill., La., Miss., Ohio. 5th, Colo., Ind., Kans., N. H., N. C. 6th, Colo., Del., Iowa, N. J., N. Y., Oregon, Pa. 7th, Colo., Iowa, Mont., N. Mex., Oregon. 8th, Mont., N. Mex. 9th, Ariz., Fla., Wis. 10th, Colo., Fla., Iowa, Kans., N. Dak. 11th, Ariz., Colo., Kans., N. Mex., Tex. 12th, N. H., N. Mex., N. C. 13th, Colo., Kans., N. C., S. C. 14th, Colo., Kans., N. Mex., Utah. 15th, Colo., Fla., Kans., N. Mex., Oregon. 16th, Kans., Nev., Tex. 17th, Ark., Colo., Ind. T., Nev., Okla. T., Tex., Utah. 18th, Colo., Ga., N. H., Tex., Utah. 19th, Ariz., Colo., Iowa, Kans., Miss., Mo., S. C., S. Dak., Wyo. 20th, Ariz., Colo., Ill., Ind., Iowa, Kans., Mich., Mo., Nebr., N. C., Okla. T., S. Dak. 21st, Ariz., Colo., Ill., Mo., N. Mex., Ohio, Pa., Utah. 22d, Cal., Colo., Ind., Ohio, Tex., Utah. 23d, Ariz., Colo., Kans., Nebr., N. Mex., N. C., Va., Wyo. 24th, Colo., Iowa, N. Mex. 25th, Ala., Colo., Nev., N. Mex., Okla. T., S. C., Tex. 26th, Ark., Colo., Miss., Nev., Oregon, Tenn. 27th, Ariz., Colo., Iowa, Nev. 28th, Cal., Kans., S. Dak. 29th, Iowa, Kans., Minn., Nebr., S. Dak., Tenn., Tex. 30th, Cal., Fla., Iowa, Minn., Nebr., N. C., Oregon, S. C., S. Dak., Tex., W. Va. 31st, Colo., Iowa, Kans., Minn., Mo., Nebr., N. C., Ohio, S. Dak., Va.

SLEET.

Sleet was reported as follows: 2d, Mont. 3d, Nebr. 4th Iowa, Nebr., Ohio, Pa., S. Dak. 5th, D. C., N. Y., Ohio, Pa. 6th, N. Y., Pa. 8th, S. Dak. 10th, Colo., Iowa, Mich. 13th, 14th, 16th, and 20th, Colo. 21st, Wyo. 24th and 25th, Colo.

WINDS.

The prevailing winds during May, 1891, are shown on Chart II by arrows flying with the wind. In New England, on the northeast slope of the Rocky Mountains, and over the middle plateau region the winds were generally from southeast to southwest; in the west Gulf states, the Missouri Valley, and on the southeast slope of the Rocky Mountains, from southeast to south; in the Rio Grande Valley, from the southeast; in the Ohio Valley and Tennessee, and the lower lake region, from northwest to northeast; in the extreme northwest, from northeast to southeast; in the upper Mississippi valley, from north to northeast; on the middle-eastern slope of the Rocky Mountains, from south to southwest; over the southern plateau region, from southwest to northwest; on the north Pacific coast, northerly; on the south Pacific coast, from west to northwest; and in the middle and south Atlantic and east Gulf states, over the Florida Peninsula, in the upper Lake region, over the northern plateau region, and on the middle Pacific coast, variable.

HIGH WINDS.

[In miles per hour.]

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Signal Service, as follows: 2d, 52, nw., at Cairo, Ill. 4th, 54, w., at Northfield, Vt. 8th, 58, sw., at Fort Sully, S. Dak. 9th, 51, s., at Chicago, Ill. 20th 60, se., at Lexington, Ky.

LOCAL STORMS.

1st.—A heavy thunder, rain, and hail storm moved southeast over Fredericksburgh, Va., at 5 p. m. A heavy hail storm injured trees, etc., at Lebanon, Mo.

2d.—A severe storm visited Paducah, Ky., between 5 and 6 p. m.; a number of persons were injured, many buildings were damaged by high wind, and the streets were flooded by heavy rain. A thunder-storm moved southeast over Cairo, Ill., at 5.20 p. m., 75th meridian time; heavy rain followed a shift of wind from s. to nw., when it blew a gale for 7 minutes, during 3 minutes of which time the wind reached 60 miles per hour; temperature fell from 74°.5 to 57°; another heavy thunder-storm moved southeast over Cairo in the evening. A hail storm injured fruit at Platte River, Mo. A flouring mill was struck by lightning and burned at Aullville, La Fayette Co., Mo. A very heavy rain storm occurred at Fayette, Mo, At 11 a. m., central time, a storm moved southeast about 5 miles west and 2 miles south of Goodrich, Kans., blowing down trees, houses, etc.; the storm had the appearance of a tornado, was funnel-shaped, and of a dirty, milky appearance, and seemed to rise and fall; when it reached the earth it moved everything,

in a path about 50 yards in width. A thunder, rain, and hail storm at Harvard, Nebr., injured fruit blossoms.

3d.—A severe thunder-storm visited the North Carolina coast in the evening. At Kitty Hawk hail damaged young plants and fruit trees. At Wilmington electric light wires were burned by lightning, and the machinery of the electric light plant was damaged to the extent of $500.

4th.—A heavy northwest gale prevailed over the east end of Lake Superior, during which a schooner was wrecked and 6 men drowned. At New Orleans, La., a dark cloud charged with electricity moved northeast over the city in the afternoon, attended with but a few drops of rain. Heavy clouds of dust caused a suspension of street traffic. A whirl formed at the corner of Camp and Caliope streets and rapidly attained large proportions, picking up scraps of paper, small pieces of wood, etc. The whirl traveled in an easterly direction; it extended from the ground high into the air, and wrenched a number of slates and shingles from houses. At Meridian, Miss., a thunder-storm, with rain and hail began 1.45 p. m. and ended 4 p. m., eastern time. Hail-stones about one-fourth inch in diameter fell for 15 minutes, and the temperature fell 21°.

5th.—At Wilmington, N. C., a thunder-storm began 1.20 p. m., central time, and hail began 1.30 p. m. and lasted 5 minutes. Considerable damage was caused by hail, and reports from Brunswick and Bladen counties stated that the cotton crop was ruined. A man was killed by lightning in Wayne Co., W. Va.

7th.—A water-spout of moderate size was observed about 3 miles south of Key West, Fla., at 12.15 p. m., central time; it moved east in advance of rain, and had a whirling motion from right to left. At Jupiter, Fla., 2.20 inches of rain fell from 5 a. m. to 5.40 a. m., and the wind reached a velocity of 25 miles per hour from the northeast.

8th.—During a gale a schooner went ashore north of Frankfort, Mich., and 4 men were drowned. At Fort Custer, Mont., light rain, with hail for 5 minutes, began 6.45 p. m. A heavy hail storm was reported in the valley of the Little Big Horn.

11th.—A heavy hail storm occurred at and north of Tip Top, Ariz. Near Elkton, Cecil Co., Md., 5 horses were killed by lightning.

12th.—Destructive thunder and hail storms occurred over south North Carolina in the evening. At Charlotte a severe thunder-storm began at 7 p. m., with fresh e. to ne. wind. At 7.01 p. m. the wind shifted suddenly to nw. and increased in force, with rain and small hail; 1.32 inch of rain fell in 16 minutes, and the wind reached 40 miles per hour. At Bishop, Cal., a barn was struck and a horse killed by lightning.

15th.—Several bridges and a section of railroad embankment in Comanche Co., Kans., were washed away by a cloud-burst. During a north gale at Milwaukee, Wis., in the afternoon, the temperature fell 25° in 10 minutes.

16th.—A wind and hail storm damaged wheat in the north part of Saline Co., Kans.

17th.—Destructive rain and hail storms occurred in Texas. One storm first appeared in Fannin county and moved southeastward through Lamar, Hopkins, and Franklin counties, and followed a more southerly course through Camp, Upshur, and Gregg counties, causing damage to cotton, small grain, and fruit. A second storm appeared in Montague county, and moved in a southeast and southerly course through Cooke, Denton, Grayson, Collin, Hunt, Kaufman, Van Zandt, Henderson, Anderson, Cherokee, and Houston counties. In the first four counties named the storm was very destructive, wheat and other grains sustaining considerable injury. A third storm appeared in Parker county and apparently moved south, as a storm from the north passed through Travis and Bastrop counties, causing damage to cotton. At Dallas, Tex., lightning struck and exploded a powder magazine. A heavy rain and hail storm visited Hot Springs, Ark., in the evening. During a thunder-storm at Helena, Mont., 2 persons were injured, a horse and a cow were killed, and a house was struck by lightning.

18th.—At Arroyo Grande, Cal., a man was killed and 2 persons were injured by lightning. A woman was killed by lightning 4 miles south of Port Royal, S. C. A man and a horse were killed by lightning in the west part of Dougherty Co., Ga. During high wind at Portland, Me., a yacht was capsized and one person was drowned.

19th.—A heavy thunder-storm, with a strip of hail about one-half mile wide and 8 to 10 miles in length, occurred near Washington, Kans., causing some damage to crops. A cloud-burst occurred in Comanche Co., Kans., and 3 children were drowned. A heavy wind and rain storm prevailed at Egeland, Day Co., S. Dak., during which the wind reached 60 miles per hour. At Howard, S. Dak., a barn was struck by lightning and burned. At Fort Smith, Ark., 3 persons were prostrated by lightning and damage was done to telegraph wires. Some stock were killed by lightning at Conway, Ark. Hail caused some damage at Spartanburg, S. C.

20th.—A tornado, which first appeared about two and one-half miles southeast of Sturgeon, Boone Co., Mo., passed eastward about one-fourth mile north of Centralia, Boone Co., Mo., at 3.30 p. m., central time; reached a point about 5 miles north of Mexico, Audrian Co., Mo., about 4 p. m., central time; passed about three-fourths mile north of Rush Hill, Audrian Co., about 4.20 p. m.; and arrived at Laddonia, Audrian Co., about 4.30 p. m., having traveled 30 to 35 miles in a zig-zag generally easterly course in about one hour, the last point of destruction being 35 miles east and 3 miles south of the starting point. The rate of progress of the storm was apparently quite regular, as, so far as can be determined from data at hand, it moved from Centralia to Mexico, a distance of about 15 miles, in 30 minutes; from Mexico to Rush Hill, 9 to 10 miles, in 20 minutes; and from Rush Hill to Laddonia, about 5 miles, in about 10 minutes. After wrecking a barn near Sturgeon the storm traveled 3 miles in a nearly due east direction without causing material damage, and in going 10 miles east it moved one and one-half mile north. For 8 to 9 miles in Audrian Co. no trace was left, the destruction again beginning just north of Mexico, that county, and the scene of greatest destruction extended thence eastward about 15 miles in a path varying from 60 to 300 yards in width, the destruction being greatest at points where the path was narrowest. A report from Centralia states that the funnel-shaped cloud was plainly seen, and that at the beginning there were 6 distinct funnels which came down one at a time and afterward united; that the lightning was incessant and vivid, and the thunder deafening; that heavy rain followed the passage of the cloud; that it was attended by a loud roaring sound, and revolved from right to left; that the width of the path of greatest destruction was about 100 yards; that timbers and trees were thrown east; that ponds and wells were emptied, no water remaining in them after the passage of the storm; and that fowls were plucked of their feathers.

Near Mexico the funnel-shaped cloud was plainly distinguishable; the cloud had a pendant tail, with a white streak which was likened to a huge serpent by some, and by others to a zig-zag white shaft, which appeared and disappeared several times, and extended along the west side of the pendant from top to bottom; a number of small "twisters" were seen spinning along the ground, which united in the air, where, after presenting a steamy white appearance, the cloud became inky black and enveloped and destroyed a barn; a subsidiary storm followed and joined the main storm cloud; at one place the cloud had five pendants; very large hail-stones fell north and east of the storm; houses were torn to pieces; and the air was full of articles carried up. In many instances buildings and trees were carried in a direction opposite to the movement of the storm. Fruit trees had the bark stripped off from the roots to the branches; chickens from which the feathers had been stripped were found in an apparently partially cooked condition; and hedges and trees were plastered with mud. About three-fourths mile north of Rush Hill the tornadic characteristics were plainly seen;

light rain fell before and after the passage of the cloud; the lightning was sharp and the thunder heavy, and very large hail fell; trees on the south side were thrown east, and on the north side west; the path of destruction was 75 to 100 yards in width; the funnel glowed and seemed about one mile high, and a running current was plainly seen in the funnel. At Laddonia similar features were observed.

The track of the tornado was through a thinly settled prairie country, and the trees were small and few in number. The loss of life was confined to Audrain county, where, so far as can be learned, 4 persons were killed and 35 more or less injured. The loss to property is estimated at more than $100,000.

At Columbia, Mo., a thunder-storm, with rain and hail, began during the night of the 19–20th; a house was struck by lightning, and some damage was done by wind. At Kansas City, Mo., the wind reached a velocity of 42 miles per hour at 7.35 p. m. A wind, rain, and hail storm passed Morley, Mo., about 6 a. m., the path being about 2 miles in width and 10 miles in length. At 7.30 a. m. another hail storm from the northwest traveled across Scott county and crossed the Mississippi River into Illinois, a distance of about 18 miles, in a path about 2 miles in width, destroying crops of all kinds. Each storm lasted about 20 minutes. At 12.30 a. m., local time, a severe storm passed 4 to 5 miles north of Allison, Kans., in an ese. course, with hard rain and hail and heavy thunder and lightning. The path of destruction was one-fourth to three-fourths mile in width and about 8 miles in length. Frame houses were torn to pieces and fragments driven into the ground; stock was killed, and other damage done. A hail storm damaged crops near Salina, Kans. A severe wind and rain storm visited Emporia, Kans., in the evening. A destructive hail, thunder, and rain storm passed over Oklahoma City, Okla. T., in the afternoon. Large hail caused great damage, and some parts of the city were flooded with water. In the southern part of the city a number of small houses were torn to pieces by what appeared to be a tornado, as the wind did not exceed 16 miles per hour. A few miles southwest of the city a man was killed by lightning. Severe thunder-storms occurred in Iowa. In Davenport a building was struck by lightning and burned. At Des Moines a building was struck by lightning and a man stunned. A storm, with distant heavy thunder and lightning, and hail about the size of cherries, passed northeast over Creston, Iowa, at 7.30 a. m., central time, causing damage to buildings to the extent of about $800. A thunder and wind storm occurred at Harvard, Nebr. At Benton, Ill., a thunder-storm, with heavy rain and hail, moved eastward about noon; fruit and wheat were damaged by hail. A thunder-storm, with hail, was reported at Cairo, Ill.

At Oran, Mo., a storm moved southeast between 7 and 8 a. m., central time, with heavy rain, an exceptionally heavy fall of hail, and unusually severe thunder and lightning. Wheat, fruit, and garden vegetables were destroyed by hail, and one building was unroofed.

A hail storm occurred at Eagle Pass, Ariz., at 4 a. m., the stones being solid, transparent, and about the size of quail eggs. At 1.30 p. m. a similar storm crossed the Gila River above Fort Thomas. A thunder-storm, with heavy rain, caused some damage to buildings at Duluth, Minn. At Red Bluff, Cal., a northwest gale began the morning of the 19th and ended 7 p. m., 20th, with maximum wind 40 miles per hour, and an extreme velocity of 48 miles per hour; considerable damage was caused to fruit trees and grain.

21st.—Severe thunder-storms occurred over south New Jersey. In the evening a thunder-storm, with hail, occurred at Pittsburg, Pa. Heavy thunder-storms occurred in Ohio. At Cleveland a brewery was struck by lightning and burned; loss about $150,000. Considerable damage was reported at points in central and north Ohio by heavy wind. Near Columbus a man and a horse were killed by lightning.

22d.—At Atlantic City, N. J., a severe wind and rain storm, with thunder and lightning, began 6.30 p. m., the wind attaining a velocity of 47 miles per hour. Minor damage was caused by the wind, and lightning slightly damaged a switch board at the telegraph office. At Frederick, Md., a wind storm about 5.45 p. m. uprooted trees, etc. At Leonardtown, Md., some damage was caused by a severe wind and thunder-storm at 7.30 p. m. Severe thunder-storms, with rain and hail, were reported in Shelby and Miami counties, Ohio; trees were blown down, and fruit and crops were injured. Destructive hail storms were reported in the counties of east-central Indiana, and heavy wind and rain storms in Cowley and Douglas counties, Kans.

23d.—High wind delayed vessels at Jupiter, Fla. A heavy thunder, rain, and hail storm passed over Raleigh, N. C., between 8 and 10 p. m. The wind reached an extreme velocity of 59 miles, and some damage was caused by hail. Destructive wind, rain, and hail storms were reported in the counties of central and south-central Virginia. A cloud-burst occurred in Currew Gulch, one mile north of Boisé City, Idaho. A large volume of water swept down, flooding parts of the town with several feet of water, and causing damage to Government and private property.

25th.—A heavy hail storm caused damage to crops 6 miles nw. from Wiggins, Ala. Severe hail storms damaged crops in Taylor and Tarrant counties, Texas. At Winnemucca, Nev., a thunder storm, with heavy rain and hail, prevailed from 7 to 7.45 p. m. The storm crossed the valley from the south and was about 1 mile in width; some roofs were damaged and vegetation was beaten down.

26th.—A thunder-storm, with heavy rain, occurred at Charlotte, N. C., in the afternoon. One person was killed by lightning near Charlotte, and damage was caused to crops. At Chattanooga, Tenn., lightning caused trouble to the Electric Street Car Co. A wind and hail storm caused slight damage at Batesville, Miss. Heavy wind and rain prevailed in Gilliam and Morrow counties, Oregon. A squall of wind, with heavy rain, thunder, and lightning, caused a freshet about 10 miles west of Heppner, Morrow Co., Oregon, and large hailstones fell about 2 miles north of that place. At Arlington, Gilliam Co., damage to buildings was caused by high wind.

27th.—A small water-spout was observed about 1 mile nw. of Key West, Fla., in the evening. A thunder-storm, with very heavy rain, occurred at Jacksonville, Fla., from 12.05 to 1.20 p. m; high wind, reaching an extreme velocity of 45 miles from the nw., caused some damage in and about the city. A violent thunder-storm, with heavy rain, moved southeast over Augusta, Ga., in the afternoon; from 2.43 to 3.43 p. m. 1.15 inch of rain fell. A heavy wind storm from the sw. caused damage to buildings to the extent of about $800 at Payette, Idaho. A thunder-storm, with heavy rain and hail, occurred at Winnemucca, Nev., in the afternoon, and the wind reached a velocity of 34 miles per hour from the w. at 3.45 p. m. A severe storm was also reported in the northeast part of Humboldt Co., Nev. A severe thunder-storm, with heavy rain, occurred near Happy Valley, Oregon, and some damage was caused by high water in streams.

29th.—Severe storms occurred in southeast South Dakota. Near Howard, Miner Co., a barn was struck by lightning and burned. In Minnehaha county the rainfall was very heavy.

30th.—A heavy hail storm caused damage to crops at Duke, Fla. A thunder-storm, with heavy rain and some hail, moved eastward over the north part of Taylor Co., W. Va., about 2.30 p. m., central time. Heavy rain fell at Pittsburg, Pa., and 2 houses were struck by lightning. At Alta, Iowa, a thunder-storm, with rain, hail, and high wind, occurred at night, during which a horse was killed by lightning. A gale, with heavy rain and hail, occurred near Webster, S. Dak. A thunder, rain, and hail storm occurred at McMinnville, Oregon. Heavy thunder-storms, with hail and rain, occurred in Yuba and Colusa counties, Cal., causing damage to fruit, etc.

31st.—A man was killed by lightning at Beaufort, S. C. A thunder-storm, with hail, occurred at Weldon, N. C.; some damage was caused by hail. A severe thunder-storm was reported

in Shelby Co., Ohio, and in Preble Co., Ohio, a heavy hail storm caused some damage to crops. A very heavy rain storm caused damage to crops and bridges at Oregon, Mo. A thunder-storm, with heavy rain, and hail the size of walnuts, occurred at Kansas City, Mo., in the afternoon, with maximum wind velocity 40 miles per hour from the northwest. A destructive rain and hail storm was reported at Lead City, S. Dak.; houses were flooded and washouts occurred on the railroad.

INLAND NAVIGATION.

Heights of rivers above low-water mark, May, 1891 (in feet and tenths).

Stations.	Danger-points on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River.						
Shreveport, La	29.9	10	24.4	31	15.4	9.0
Arkansas River.						
Fort Smith, Ark	22.0	31	17.0	19	4.4	12.6
Little Rock, Ark	23.0	9	16.0	22	7.2	8.8
Missouri River.						
Fort Buford, N. Dak	.....	30, 31	11.4	1	4.2	7.2
Sioux City, Iowa	18.7	31	9.8	18	6.7	3.1
Omaha, Nebr	18.0	23, 31	9.3	14, 15, 17, 18	7.5	1.8
Kansas City, Mo	21.0	27	13.7	16, 20	7.8	5.9
Mississippi River.						
Saint Paul, Minn	14.0	1	5.2	26, 29, 30	2.8	2.4
La Crosse, Wis	13.0	1	10.1	31	4.1	6.0
Dubuque, Iowa	16.0	1, 2	13.9	31	4.7	9.2
Davenport, Iowa	15.0	3, 5	10.3	31	3.3	7.0
Keokuk, Iowa	14.0	5, 6	10.3	31	3.9	6.4
Saint Louis, Mo	30.0	5	20.7	22	13.1	7.6
Cairo, Ill	40.0	1	30.0	24, 25	13.7	16.3
Memphis, Tenn	33.0	1	27.2	30	10.8	16.4
Vicksburg, Miss	41.0	1, 2	47.3	31	18.5	28.8
New Orleans, La	13.0	7	15.3	31	9.2	6.1
Ohio River.						
Pittsburg, Pa	22.0	25	7.5	8	1.9	5.6
Parkersburgh, W. Va	38.0	26	6.9	19, 21	3.8	3.1
Cincinnati, Ohio	45.0	1	14.7	18	7.9	6.8
Louisville, Ky	24.0	1	7.8	19, 20	4.9	2.9
Cumberland River.						
Nashville, Tenn	40.0	1	10.1	31	2.4	7.7
Tennessee River.						
Chattanooga, Tenn	33.0	1	5.9	25	3.8	2.1
Monongahela River.						
Pittsburg, Pa	29.0	25	7.5	8	1.9	5.6
Savannah River.						
Augusta, Ga	32.0	16	11.8	24, 25, 26	8.1	3.7
Willamette River.						
Portland, Oregon	15.0	31	13.7	3	7.7	6.0
Susquehanna River.						
Harrisburg, Pa	17.0	1	3.7	21, 22, 31	2.0	1.7
Alabama River.						
Montgomery, Ala	48.0	1	6.5	18, 19	3.9	2.6

FLOODS.

The Rio Grande River remained extremely high, and much damage was caused to buildings and other property during the first half of the month. On the 4th the water was running over the banks at several points above Albuquerque, N. Mex., devastating fields. Heavy snow drifts were reported in the mountains of south Colorado. On the 6th a great portion of the southern part of El Paso, Tex., was under water, and the river was rising rapidly at Albuquerque. All streams in north New Mexico were running bank-full, and the snow banks in the mountains were melting slowly. The river continued to rise at El Paso on the 7th, 8th, and 9th, and the Pecos River was the highest ever known. On the 14th the water was slowly subsiding at Albuquerque, and the river reached its highest stage at El Paso on the 15th. The Mississippi River remained above the danger-line at Vicksburg, Miss., until the 15th, and at New Orleans, La., until the 22d. The Lake Concordia, Miss., levee gave way, submerging the Ferriday plantation, and covering a part of the track of the New Orleans and Northwestern Railroad. The rear protection levee of Speranza plantation, 25 miles above New Orleans, broke on the 11th, and the plantation was submerged.

The lower Mississippi river reached a dangerous stage the latter part of February. On the 23d of that month it stood at or near the danger-line at points south of Memphis, Tenn., and on February 26th it reached the danger-line at Memphis and was 1.9 foot above the danger-line at New Orleans, La. During March the river remained above the danger-line south of Memphis, and continued above at Vicksburg and New Orleans during April. The first break in the levees occurred at Vidalia, La., March 10th. Several other breaks occurred in Mississippi and Louisiana, but no serious damage was caused.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroras were reported as follows: 4th, Kent's Hill and Orono, Me.; Lyons, N. Y.; Hayward and Medford, Wis. 7th, Sycamore, Ill.; Alta and Delaware, Iowa; Kent's Hill, Me.; Red Wing, Minn.; South Canisteo, N. Y.; Fort Buford, N. Dak.; Kimball, S. Dak. 8th, Orono, Me. 11th, Glendive, Mont. 13th, Alta and Cresco, Iowa; Kent's Hill, Me.; Blue Hill Observatory and Cambridge, Mass.; Sault de Ste. Marie, Mich.; Montevideo, Minn.; Fort Custer, Mont.; Plymouth, N. H.; Lyons, N. Y.; Fort Sully, S. Dak.; Peshtigo, Wis. 14th, Alta, Iowa; Orono, Me.; Blue Hill Observatory, Mass.; Fort Custer, Mont.; Plymouth, N. H.; Fort Sully and Wolsey, S. Dak. 15th, Webster, S. Dak.; Peshtigo, Wis. 16th and 17th, Fort Custer, Mont. 24th and 25th, South Canisteo, N. Y. 27th, Alta, Iowa. 28th, Hayward, Wis. 29th, Tatoosh Island, Wash.

Fort Custer, Mont., 13–14th: at 10.25 p. m., 13th, an auroral arch extended over about 40° azimuth and to 20° altitude, with "merry dancers" shooting to 40° to 50° altitude. The arch was of a pale yellow color; it disappeared at times, but the "merry dancers" were visible until midnight; they reappeared at 2.30 a. m., 14th, and disappeared at dawn of day.

THUNDER-STORMS.

Thunder-storms were reported as follows: east of the Rocky Mountains thunder-storms were reported in the greatest number of states, 24, on the 19th; in 23 on the 20th; in 15 to 20 on the 1st, 3d, 11th, 12th, 18th, 21st to 26th, and 29th to 31st; in 10 to 14 on the 2d, 4th, 9th, 10th, 13th, 15th to 17th, 27th, and 28th; in 5 to 9 on the 5th, 7th, 8th, and 14th; and in 3 on the 6th. There was no date for which thunder-storms were not reported east of the Rocky Mountains.

East of the Rocky Mountains thunder-storms were reported on the greatest number of dates, 23, in Iowa and N. C.: on 22 in Mo.; on 21 in Tex.; on 15 to 20 in Fla., Kans., Miss., Nebr., and S. Dak.; on 10 to 14 in Ark., Ga., Ill., Ky., Md., Mich., N. J., N. Dak., Ohio, Okla. T., S. C., Tenn., and Va., on 5 to 9 in Ala., Conn., Ind., La., Me., Mass., Minn., Mont., Pa., and Wis.; and on 1 to 4 in Del., D. C., Ind. T., N. H., N. Y., R. I., Vt., and W. Va. West of the Rocky Mountains thunder-storms were reported in Ariz. on the 4th, 7th to 11th, 19th, 20th, 22d, 23d, 26th, 27th, and 31st; in Cal. on the 13th, 15th, 17th to 20th, 22d to 27th, 29th, and 30th; in Colo. on the 2d, 3d, 5th to 11th, 13th to 28th, and 30th; in Idaho on the 3d, 13th to 16th, 23d to 25th, 27th, 29th, and 30th; in Nev. on the 6th, 7th, 13th, 16th to 18th, 20th to 23d, and 25th to 27th; in New Mex. on the 3d, 4th, 7th, 8th, 10th, 11th, 13th, 14th, 16th, 18th to 21st, and 24th; in Oregon on the 6th, 13th to 15th, and 24th to 31st; in Utah on the 6th, 7th, 13th to 15th, 17th, 18th, 20th to 25th, and 27th to 29th; in Wash. on the 4th, 9th, 12th, 16th, and 25th to 27th; and in Wyo. on the 7th, 14th, 15th, 17th, 21st, 23d, 24th, and 27th.

MISCELLANEOUS PHENOMENA.

DROUTH.

Drouth prevailed in north and south Florida, Mississippi, Louisiana, Arkansas, Maryland, Pennsylvania, east-central and west New York, central Massachusetts, Tennessee, Ohio, Indiana, Iowa, Michigan, Wisconsin, Minnesota, and North and South Dakota. At Key West, Fla., a water famine was averted by opening to the public large cisterns at Fort Taylor and the Barracks. In Georgia the drouth was broken on the 4th. In South Carolina the first half of the month was dry. In Mississippi all vegetation was in need of rain at the close of the month. In Louisiana the drouth was the most prolonged of any noted since the establishment of Signal Service stations, and vegetation suffered severely, notably in the south part of the state. In north Arkansas the month was reported the driest May since 1881, and crops were suffering. In Virginia, West Virginia, and Maryland the early part of the month was very dry. In parts of Pennsylvania and New York crops were retarded and injured by dry weather. In central Massachusetts drouth prevailed during the month. In Tennessee the drouth, which prevailed almost unbroken, was the most severe experienced in many years, more especially in the middle and eastern divisions, and was very damaging to crops. In Ohio, Indiana, and Kentucky the dry spell was broken by rain on the 20th and 21st. In Iowa the early part of the month was very dry and unfavorable for grain. In Michigan all parts of the state, except the southwest portion, suffered from drouth which began April 21st and was not broken until May 20th. In Wisconsin severe drouth prevailed, except in south, west, and northwest parts of the state. In Minnesota and the Dakotas the drouth was broken on the 18th and 19th, previous to which dates crops were in a bad condition.

FOREST FIRES.

On the 1st forest fires were raging in the pine and cranberry districts of south New Jersey, and near Reading and Wellsborough, Pa., and Newburgh, N. Y. In central Pennsylvania the forest fires of the first half of the month destroyed an immense amount of valuable timber and property. From the 9th to 21st forest fires raged in the upper part of the peninsula of Michigan, destroying thousands of acres of timber. The villages of Clinton, Altona, and Walkersville were reported destroyed, and dense smoke interrupted navigation on the Straits of Mackinac. Forest fires caused great damage in Douglas Co., Wis., and about Duluth, Minn.

SUN SPOTS.

Mr. D. E. Hadden, Alta, Iowa: 1st, 3 groups; group in faculæ nw. disappearing by solar rotation. 2d, 2 groups, 3 spots; large spot disappearing by rotation; faculæ by rotation in on e. and se. limbs. 5th, 2 groups, 9 spots; groups in large areas; faculæ by rotation on se. and ne. limbs 1 day in. 6th, 2 groups, 7 spots; faculæ w. disappearing by rotation. 7th, 2 groups, 7 spots. 8th, 3 groups, 11 spots; new group with faculæ by rotation; aurora preceding evening. 9th, 3 groups. 10th, 3 groups, 25 spots. 11th, 5 groups, 20 spots; group faculæ by rotation e. limb; new group e. limb, and faculæ nw. 12th, 5 groups; new group by rotation se. limb. 13th, 5 groups, 12 spots; faculæ by rotation e. limb; extensive area of faculæ nw.; aurora in evening to 3 a. m. 14th. 14th, 5 groups, 10 spots; aurora in evening to 3.30 a. m. 15th. 15th, 4 groups. 16th, 3 groups, 9 spots; group by rotation e. limb. 17th, 3 groups. 18th, 4 groups, 13 spots; new group by rotation se. limb; faculæ by rotation. 19th, 5 groups; 24 spots; new group with faculæ by rotation in on e. limb; faculæ by rotation e. limb; group very extensive. 22d, 5 groups. 23d, 4 groups, 32 spots; prominent faculæ w. and sw. 24th, group by rotation se. limb. 25th, 5 groups, 26 spots; 3 groups n., 2 groups s. latitude. 26th, 5 groups, 25 spots. 27th, 5 groups, 27 spots; group w. limb disappearing by rotation. 28th, 3 groups; new group with faculæ by rotation e. limb; aurora preceding evening. 29th, 4 groups, 23 spots; faculæ by rotation e. limb. 30th, 3 groups, 13 spots. 31st, 3 groups, 13 spots; group faculæ by rotation on e. limb.

Mr. John W. James, Riley, Ill.: 1st, large spot of April 30th disappeared by solar rotation. 5th, 1 large and 2 small spots 1 day in on east edge, in south latitude; faculæ near east edge, north latitude. 7th, 1 new spot 3 days in east. 10th, 2 new spots near sun's meridian. 13th, 1 new group 1 day in east. 17th, large spot that disappeared in west on the 1st reappeared in east. 18th, 1 new spot near east edge. 21st, 1 new group near east edge. 24th, 1 new spot on east edge south latitude. 25th, 2 small spots. 26th, 1 faint group 3 days in on east. 27th, group of 13th disappeared on west edge; 2 new spots in sw. 28th, 1 new spot on east edge; prominent faculæ on west limb. 30th, 2 new spots, 2 days in; faculæ on west limb. 31st, all spots gone, except groups of 21st and 28th.

Mr. H. D. Gowey, North Lewisburgh, Ohio: sun spots were observed on the 1st, 2d, and 6th to 31st.

Haverford College Observatory, Pa. (observed by Prof. F. P. Leavenworth):

Date.	Number of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Faculæ.	Remarks.
	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	
May, 1891.										
1, 10 a. m...	2	12	0	0	0	0	4	29	2	Definition good.
2, 10 a. m...	1	6	1	5	0	0	3	13	2	Definition good; 1 large spot.
3, 2 p. m...	0	0	1	2	0	0	1	2	2	Definition fair.
4, 12 m	3	9	0	0	0	0	4	12	4	Definition poor; 1 large spot.
5, 12 m	0	0	2	5	0	0	2	9	2	Definition poor; 2 large spots.
6, 9 a. m...	0	0	0	0	0	0	2	16	2	Definition poor; 1 large spot.
7, 9 a. m...	1	1	0	0	0	0	3	10	2	Definition poor; 1 large spot.
8, 12 m	2	3	0	0	0	0	4	35	2	Definition good.
9, 9 a. m...	1	1	0	0	0	0	4	44	3	Definition good.
10, 8 a. m...	1	1	0	0	0	0	4	77	0	Definition good; 1 large spot.
11, 4 p. m...	2	3	0	0	0	0	6	40	4	Definition fair; 4 large spots.
12, 10 a. m...	1	5	1	3	0	0	6	37	3	Definition fair; 2 large spots.
13, 10 a. m...	2	7	1	13	0	0	6	16	4	Definition poor; 3 large spots.
17, 10 a. m...	0	0	0	0	0	0	4	24	1	Definition fair.
18, 10 a. m...	1	3	0	0	0	0	4	32	3	Definition good; 4 large spots.
19, 9 a. m...	1	1	0	0	0	0	5	55	3	Definition fine; 4 large spots.
20, 11 a. m...	0	0	0	0	0	0	5	40	1	Definition fair; 4 large spots.
21, 9 a. m...	2	9	0	0	0	0	7	59	2	Definition fair.
22, 9 a. m...	2	4	0	0	0	0	9	81	2	Definition fair.
27, 1 p. m...	0	0	0	0	0	0	3	18	0	Definition bad.
28, 12 m	1	1	0	0	0	0	5	46	3	Definition poor; 1 large spot.
31, 9 a. m...	0	0	1	3	0	0	3	30	1	Definition fair; 1 large spot.

VERIFICATIONS.

FORECASTS FOR 48 AND 72 HOURS IN ADVANCE.

Appreciating the great importance that long time predictions possess for the general public the Chief Signal Officer has authorized forecasts for 48 and 72 hours, covering the 2d and 3d days in advance. These are optional with the forecast official, and are only made when clearly in the public interest, and cover, in all cases, considerable areas of country, and are not confined to localities.

Percentages of verifications made for second day in advance. Number of predictions made: weather, 92; temperature, 37. Percentages of verifications: weather, 91.8; temperature, 97.0; weather and temperature combined, 93.0.

Percentages of verifications for third day in advance. Number of predictions made, temperature, 4. Percentage of verification, 100.

WIND SIGNALS FOR MAY, 1891.

Statement showing percentages of justifications of wind signals for the month of May, 1891.

Wind signals—(Ordered by Assistant Professor H. A. Hazen.)—Total number of signals ordered, 76; justified as to velocity, wholly, 60, partly, 1; justified as to direction, 73. All of the signals ordered were cautionary; 36 signals were ordered for easterly winds, of which 33 were justified, and 40 were ordered for westerly winds, all of which were justified. Percentage of justifications, 73.0.

No cold-wave signals were ordered, and no temperature-fall warnings were issued during the month.

Percentages of verifications of weather and temperature signals reported by directors of the various State Weather Services for May, 1891.

States.	Weather.	Temperature.	States.	Weather.	Temperature.
Illinois	84	79	New Jersey	79	90
Iowa	89	92	New York	80	81
Michigan	88	88	North and South Dakota	88	77
Minnesota	93	83	Ohio	89	89
Missouri	86	89	South Carolina	80	88
Nebraska	83	91			

[Verifications made by Assistant Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Division.]

FORECASTS FOR 24 HOURS IN ADVANCE.

The forecasts for districts east of the Rocky Mountains for May, 1891, were made by Assistant Professor H. A. Hazen, Signal Service, and those for the Pacific coast districts were made at San Francisco, Cal., by 2d Lieutenant John P. Finley, 19th Infantry.

Percentages of forecasts verified, May, 1891.

States.	Weather.	Temperature.	Weather and temperature combined.	States.	Weather.	Temperature.	Weather and temperature combined.
Maine	88.1	67.1	79.7	Arkansas	84.2	80.6	82.8
New Hampshire	82.9	72.9	78.9	Tennessee	90.6	79.0	86.0
Vermont	87.4	77.7	83.5	Kentucky	93.5	74.2	85.8
Massachusetts	91.6	80.6	87.2	Ohio	85.2	71.3	70.6
Rhode Island	91.0	84.8	88.5	West Virginia	86.1	64.5	77.5
Connecticut	90.3	81.9	87.0	Indiana	91.0	78.7	86.1
Eastern New York	88.4	75.5	83.2	Illinois	90.6	86.1	88.8
Western New York	84.5	67.1	77.5	Lower Michigan	92.6	74.8	85.5
Eastern Pennsylvania	87.4	78.7	83.9	Upper Michigan	93.2	77.4	86.9
Western Pennsylvania	80.3	71.3	76.7	Wisconsin	89.7	75.5	84.0
New Jersey	81.4	76.8	79.5	Minnesota	91.6	82.3	87.9
Delaware	86.1	81.3	84.2	Iowa	91.0	79.0	86.2
Maryland	86.1	88.1	86.9	Kansas	84.8	80.0	82.9
District of Columbia	80.3	87.1	83.0	Nebraska	89.0	84.5	87.2
Virginia	89.0	77.7	84.5	Missouri	89.4	89.7	89.5
North Carolina	91.0	80.6	86.8	Colorado	86.1	72.9	80.8
South Carolina	90.3	82.3	87.1	North Dakota	89.4	86.8	88.3
Georgia	91.0	90.0	90.6	South Dakota	91.0	83.5	88.0
Eastern Florida	91.6	94.5	92.8	Southern California	95.8	79.0	89.1
Western Florida	96.8	95.8	96.4	Northern California	90.3	80.3	86.3
Alabama	92.6	85.5	89.7	Oregon	88.1	68.1	80.1
Mississippi	92.3	84.2	89.0	Washington	85.5	72.6	80.3
Louisiana	90.6	88.7	89.9				
Texas	89.7	80.6	86.1	Monthly percentage	88.0	80.3	85.4

In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. The forecasts of temperature in districts east of the Rocky Mountains for May, 1891, were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day. The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10.

STATE WEATHER SERVICES.

[*Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.*]

The following extracts and summaries are republished from reports for May, 1891, of the directors of the various state weather services:

ALABAMA.

Cool weather and drouth injured vegetation.

Temperature.—The mean was 5.0 below the normal; maximum, 99, at Wiggins, 25th; minimum, 36, at Chepultepec, 7th; greatest monthly range, 54, at Brewerton and Opelika; least monthly range, 22, at Goodwater.

Precipitation.—Greatest monthly, 4.09, at Double Springs; least monthly, 0.00, at Chepultepec.

Wind.—Prevailing direction, north.—*Prof. P. H. Mell, Auburn, director; J. M. Quarles, Private, Signal Corps, assistant.*

ARKANSAS.

The month was much colder and drier than usual.

Temperature.—The mean was 2.4 below the normal; maximum, 97, at Lead Hill, 30th; minimum, 36, at Fayetteville, 7th; greatest monthly range, 59, at Lead Hill; least monthly range, 20, at Winslow.

Precipitation.—The average was 1.17 below the normal; greatest monthly, 5.37, at Hot Springs; least monthly, 0.55, at Devall Bluff.

Wind.—Prevailing direction, south.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Sergeant, Signal Corps, assistant.*

COLORADO.

Temperature.—Maximum, 93, at Lamar, 8th; minimum, 1, at Breckenridge, 11th; greatest monthly range, 78, at Breckenridge; least monthly range, 40, at Como and Leadville.

Precipitation.—The average was considerably above the normal; greatest monthly, 8.67, at Brush; least monthly, 0.49, at Garnet.—*W. S. Miller, Sergeant, Signal Corps, Denver, assistant.*

ILLINOIS.

Temperature.—The mean was 3.1 below the normal of the last 13 years; maximum, 93, at McLeansborough, 31st; minimum, 28, at Oswego, 17th, at Philo, 7th, and at Pontiac, 5th.

Precipitation.—The average was 2.07 below the normal of the last 13 years; greatest monthly, 4.74, at Rushville; least monthly, 0.47, at Pontiac.

Wind.—Prevailing direction, northeast.—*John Craig, Sergeant, Signal Corps, Springfield, in charge.*

INDIANA.

Temperature.—Maximum, 90, at Rockville, 30th; minimum, 25, at Point Isabel, 5th and 7th; greatest monthly range, 63, at Point Isabel; least monthly range, 40, at Huntingburgh.

Precipitation.—Greatest monthly, 2.79, at Valparaiso; least monthly, 0.30, at Huntingburgh.

Wind.—Prevailing direction, northeast.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Sergeant, Signal Corps, assistant.*

IOWA WEATHER AND CROP SERVICE.

Temperature.—The mean was about 2.0 below the normal; maximum, 94, at Glenwood, 14th; minimum, 21, at Indianola, 6th; greatest monthly range, 62, at Atlantic; least monthly range, 39, at Independence.

Precipitation.—The average was about 1.25 below the normal; greatest monthly, 7.10, at Mount Vernon; least monthly, 1.46, at Bancroft.

Wind.—Prevailing direction, northeast.—*J. R. Sage, Des Moines, director; G. M. Chappel, Observer, Signal Service, assistant.*

KANSAS.

Temperature.—The mean was 2.5 below the normal; maximum, 98, at Morton, 30th; minimum, 27, at Pleasant Dale, 11th; greatest monthly range, 66, at Eureka Ranch; least monthly range, 42, at Wallace.

Precipitation.—Greatest monthly, 10.25, at Kellogg; least monthly, 1.50, at Page City.

Wind.—Prevailing direction, south.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Sergeant, Signal Corps, assistant.*

KENTUCKY.

Temperature.—The mean was about 4.0 below the normal; maximum, 90, at Canton and Princeton, 31st; minimum, 29, at Caddo, 6th, and at Harrodsburgh, 7th; greatest monthly range, 59, at Princeton; least monthly range, 43, at Franklin.

Precipitation.—The average was about 2.00 below the normal; greatest monthly, 3.96, at Middlesborough; least monthly, 0.76, at Bowling Green.

Wind.—Prevailing direction, northeast.—*Dr. E. A. Grant, Louisville, director; Frank Burke, Sergeant, Signal Corps, assistant.*

LOUISIANA.

Temperature.—The mean ranged over 3.0 below the normal in the northern portion, and over 5.0 in the southern portion of the state; maximum, 95, at Cheneyville, 5th, and at Mandeville, 25th and 26th; minimum, 38, at Winnsborough, 7th; greatest monthly range, 54, at Winnsborough; least monthly range, 21, at Port Eads.

Precipitation.—Greatest monthly, 3.21, at Amité City; least monthly, trace, at Marksville.

Wind.—Prevailing directions, northeast and south.—*George E. Hunt, Sergeant, Signal Corps, New Orleans, in charge.*

MARYLAND.

Temperature.—Maximum, 91, at Cumberland, 10th; minimum, 36, at Barren Creek Springs, 6th; greatest monthly range, 50, at Barren Creek Springs and Cumberland; least monthly range, 33, at Gaithersburgh.

Precipitation.—Greatest monthly, 6.17, at Leonardtown; least monthly, 2.45, at Mount Saint Mary's.

Wind.—Prevailing direction, southwest.—*William B. Clark, Johns Hopkins University, director; Milton Whitney, Maryland Agricultural College, secretary and treasurer; C. P. Cronk, Sergeant, Signal Corps, in charge.*

MICHIGAN.

Temperature.—The mean was 1.7 below the normal of the last 15 years; maximum, 89, at Benton Harbor, 18th; minimum, 17, at Evart, 5th, and at Gaylord, 17th; greatest monthly range, 68, at Hillman; least monthly range, 42, at Atlantic.

Precipitation.—The average was 2.05 below the normal of the last 15 years; greatest monthly, 3.60, at Kalamazoo; least monthly, trace, at Harbor Springs and Hillman.

Wind.—Prevailing direction, southwest.—*N. B. Conger, Sergeant, Signal Corps, Lansing, director.*

MINNESOTA.

Temperature.—The mean was slightly in excess of the normal; maximum, 94, at Crookston, 7th; minimum, 15, at Leech Lake, 5th, and at Pokegama Falls, 6th; greatest monthly range, 75, at Crookston; least monthly range, 47, at Saint Charles.

Precipitation.—The average was about 2.00 below the normal; greatest monthly, 2.90, at Crookston; least monthly, 0.59, at Pokegama Falls.

Wind.—Prevailing direction, south.—*John Healy, Sergeant, Signal Corps, Minneapolis, in charge.*

MISSISSIPPI.

Temperature.—The mean was 2.5 below the normal; maximum, 100, at Columbus, 23d; minimum, 38, at Louisville, 6th, at Aberdeen, 7th and 8th, and at Brookhaven, 8th; greatest monthly range, 58, at Louisville, Vaiden, and Aberdeen; least monthly range, 31, at West Point.

Precipitation.—The average was 2.35 below the normal; greatest monthly, 6.56, at Brookhaven; least monthly, trace, at Kosciusko.—*R. B. Fulton, Signal Corps, University, director.*

MISSOURI.

Temperature.—The mean was about 3.0 below the normal; maximum, 97, at Protem, 30th; minimum, 28, at Adrian, 5th.

Precipitation.—The average was 0.50 above the normal; greatest monthly, 7.68, at Oregon (1); least monthly, 1.42, at Concordia.—*Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director; A. L. McRae, Sergeant, Signal Corps, assistant.*

NEBRASKA.

The month was rather cooler than usual, with abundant rainfall along the southern line of the state, but very little in some parts farther north.

Temperature.—Maximum, 100, at Bassett and Long Pine; minimum, 24, at Hay Springs.

Precipitation.—Greatest monthly, 5.37, at Precept; least monthly, 0.41, at Sargent.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Sergeant, Signal Corps, assistant.*

NEVADA.

The month was remarkable for the extensive and long continued rains accompanied by cool weather, especially during the latter part of the month.

Temperature.—Maximum, 95, at Downeyville, 2d; minimum, 21, at Eureka Ranch; greatest monthly range, 64, at Eureka Ranch; least monthly range, 36, at Humboldt.

Precipitation.—Greatest monthly, 3.96, at Ely; least monthly, 0.35, at Hot Springs.

Wind.—Prevailing direction, southwest.—*Prof. Charles W. Friend, Carson City, director; F. A. Carpenter, private, Signal Corps, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

Temperature.—The mean was 1.2 below the normal; maximum, 92, at Westborough, 11th; minimum, 22, at Ludlow, 6th, and at Monson, 7th; greatest monthly range, 66, at Lake Cochituate; least monthly range, 33, at Nantucket.

Precipitation.—The average was 1.35 below the normal; greatest monthly, 3.47, at Lunenburgh; least monthly, 1.03, at Mansfield, Mass.

Wind.—Prevailing direction, southwest.—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; J. Warren Smith, Private, Signal Corps, assistant.*

NEW JERSEY.

Temperature.—The mean was 0.2 below the normal; maximum, 93, at New Brunswick, 11th; minimum, 24, at Allaire, 6th; greatest monthly range, 64, at Lancewood; least monthly range, 46, at Oceanic.

Precipitation.—The average was 0.77 below the normal; greatest monthly, 5.39, at Oceanic; least monthly, 1.78, at Mount Holly.

Wind.—Prevailing direction, southwest.—*E. W. McGann, Sergeant, Signal Corps, New Brunswick, in charge.*

NEW YORK.

Temperature.—The mean was 2.4 below the normal; maximum, 90, at Middleburgh and Geneva, 10th; minimum, 19, at Plattsburgh Barracks, 5th; greatest monthly range, 67, at Plattsburgh Barracks; least monthly range, 44, at Fort Hamilton and Peekskill.

Precipitation.—Greatest monthly, 4.03, at Fort Wadsworth; least monthly, 0.32, at Addison.—*Prof. E. A. Fuertes, Dean of the College of Civil Engineering, Cornell University, director; R. M. Hardinge, Private, Signal Corps, assistant.*

NORTH CAROLINA.

The month was cold and wet, and very unfavorable for the growth of crops.

Temperature.—The mean was 3.1 below the normal of the last 20 years, and is the lowest mean for May since 1877; maximum, 95, at Chapel Hill, 10th and 11th; minimum, 23, at Bakersville, 7th; greatest monthly range, 65, at Franklin; least monthly range, 36, at Kitty Hawk.

Precipitation.—The average was 1.20 above the normal of the last 20 years; greatest monthly, 11.08, at Seven Pines; least monthly, 1.03, at Wilmington.

Wind.—Prevailing direction, south.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Sergeant, Signal Corps, assistant.*

NORTH AND SOUTH DAKOTA.

Temperature.—The mean was about 2.0 above the normal; maximum, 102, at Clark, S. Dak., 29th; mimimum, 17, at Fort Buford, N. Dak., 3d; greatest monthly range, 74, at Clark, S. Dak., and Napoleon, N. Dak.; least monthly range, 43, at De Smet, S. Dak.

Precipitation.—The average was 1.56 below the normal; greatest monthly, 3.35, at Clark, S. Dak.; least monthly, 0.38, at Forestburgh, S. Dak.

Wind.—Prevailing direction, south.—*S. W. Glenn, Sergeant, Signal Corps, Huron, S. Dak., in charge.*

OHIO.

Temperature.—The mean was 2.0 below the normal; maximum, 93, at Portsmouth, 10th; minimum, 25, at Newcomerstown, 17th.

Precipitation.—The average was 1.82 below the normal; Hiram, Bangorville, New Alexandria, Weymouth, Garrettsville, and Orangeville report a trace of snowfall during the month.—*Prof. B. F. Thomas, Columbus, director; C. M. Strong, Sergeant, Signal Corps, secretary and assistant.*

OREGON.

Temperature.—The mean was 0.7 above the normal; maximum, 97, at Weston, 25th; minimum, 16, at Silver Lake, 6th.

Precipitation.—The average was 0.23 above the normal; greatest monthly, 4.87, at Bandon; least monthly, 0.32, at The Dalles.

Wind.—Prevailing directions, north, west of the Cascades, and west to southwest east of them.—*Hon. H. E. Hayes, Master State Grange, Oswego, director; B. S. Pague, Sergeant, Signal Corps, assistant.*

SOUTH CAROLINA.

Temperature.—Maximum, 100, at Columbia, 23d; minimum, 36, at Cheraw, 8th; greatest monthly range, 58, at Columbia; least monthly range, 32, at Port Royal.

Precipitation.—Greatest monthly, 6.31, at Batesburgh; least monthly, 1.85, at Statesburgh.

Wind.—Prevailing direction, northeast.—*A. P. Butler, Columbia, director, State Weather Service, and observer, Signal Service.*

PENNSYLVANIA.

Temperature.—The mean was 2.5 below the normal; maximum, 93, at Carlisle and McConnellsburgh; minimum, 20, at Dyberry, 4th; greatest monthly range, 64, at Hollidaysburgh and Dyberry; least monthly range, 48, at Erie.

Precipitation.—The average was 1.25 below the normal; greatest monthly, 4.41, at Ligonier; least monthly, 0.31, at Blue Knob.

Wind.—Prevailing direction, northwest.—*Under direction of the Franklin Institute, Philadelphia; T. F. Townsend, observer, Signal Service, assistant.*

TENNESSEE.

Temperature.—The mean was slightly below the normal; maximum, 92, at Sharp and Bolivar, 31st; minimum, 30, at Springdale, 7th; greatest monthly range, 60, at Springdale; least monthly range, 39, at McMinnville.

Precipitation.—The mean was about 2.50 below the normal, and was the smallest amount in the last 9 years; greatest monthly, 3.76, at Jacksboro; least monthly, 0.35, at Kingston Springs.

Wind.—Prevailing directions, north and northeast.—*J. D. Plunket, M. D., Nashville, director; H. C. Bate, Signal Corps, assistant.*

TEXAS.

Temperature.—The mean was 2.0 below the normal; maximum, 97, at Rio Grande City, 29th; minimum, 42, at a number of stations; greatest monthly range, 52, at Childress; least monthly range, 20, at Corpus Christi.

Precipitation.—The average was generally deficient over the state, except over the Panhandle, where it was normal; greatest monthly, 6.77, at Menardville; least monthly, 0.08, at Luling.—*D. D. Bryan, Galveston, director; I. M. Cline, Sergeant, Signal Corps, assistant.*

WISCONSIN.

Temperature.—The mean was 4.0 below the normal; maximum, 90, at Westfield, 9th; minimum, 15, at Hayward, 4th.

Precipitation.—The average was 2.50 below the normal; greatest monthly, 4.16, at Beloit; least monthly, trace, at Wausau.

Wind.—Prevailing directions, south and southwest.—*R. E. Kerkam, Milwaukee, Sergeant, Signal Corps, in charge.*

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, May, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alabama.				
Bermuda *†	90	45	68.6	1.30
Bessemer	90	40	68.0	0.73
Brewton †	87	43	70.4	2.75
Chepultepec †	75	30	60.3	0.00
Childersburgh				1.42
Citronelle †	94	46	74.0	3.70
Claiborne Landing				4.67
Columbiana †	89	40	69.6	2.38
Cordova †				0.57
Decatur (1) †				1.23
Decatur (2)	90	38	67.2	1.13
Double Springs †	90	44	68.6	4.09
Eufaula	94	47	74.4	2.17
Evergreen	90	42	72.3	3.53
Fayette C. H.	88	56	71.3	0.80
Florence				1.45
Fort Deposit	92	46	71.2	3.13
Gadsden †				1.61
Goodwater	90			1.40
Greensborough †	88	48	71.8	2.02
Jasper †	88	38	59.5	1.57
Livingston (1) * †	93	45	68.0	2.24
Livingston (2)	89	44	69.2	3.57
Lynn				0.58
Marion	95	45	69.4	1.77
Mountain Home	88	38	64.8	1.74
Mount Willing	88	46	70.2	3.50
Mt. Vernon B'ks	94	47	72.2	3.12
Opelika	97	43	70.2	3.23
Pine Apple	92	40	76.6	1.68
Selma (2)	92	45	71.6	2.78
Sturdevant				2.31
Talladega				2.17
Tallassee Falls				1.90
Tuscaloosa				1.72
Tuscumbia (1) †	88	50	56.1?	1.49
Tuscumbia (2)	90	40	67.4	1.97
Union Springs	86	46	64.8	2.52
Uniontown †	90	46	72.4	2.61
Valley Head †	90	40	63.7	0.61
Warrior †				2.06
Wiggins †	99	44*k*	72.4*e*	2.57
Alaska.				
Juneau	71	26	47.5	4.01
Killisnoo	66	24	41.9	4.40
Arizona.				
Aris. Canal Co. Dam	101	49	74.4	0.12
Bisbee	84	41	65.2	0.72
Buckeye				0.10
Calabasas				0.54
Casa Grande *	100	51	77.8	0.00
Chino *	98	44	68.5	1.00
Chiricahua Mt				0.50
Chloride				3.72
Cooleys	80	27	54.1	1.91
Dragoon †				0.83
Dragoon Summit *	85	50	73.1	1.06
Dos Cabesos †				1.15
Dudleyville				0.99
Eagle Pass		47	61.5	0.75
Farley's Camp		56	73.8	0.35
Florence	101	48	73.8	0.97
Fort Apache	83	28	59.2	0.36
Fort Bowie	84	50	66.7	1.38
Fort Grant	84	42	65.3	1.40
Fort Huachuca	83	39	64.1	1.24
Fort Mohave	102	54	76.2	0.20
Gila Bend (1) *	96	68	79.6	.....
Gila Bend (2) *	103	70	83.7	0.04
Grand Central Mill				1.16
Holbrook †	85	35	60.4	0.52
Maricopa (1) *	107	67	80.9	0.00
Mount Huachuca	88	42	66.0	0.93
Natural Bridge?				1.06
Oro				1.60
Pantano *	95	54	74.2	0.43
Payson				0.49
Red Rock				0.35
Saint Johns				0.23
San Carlos	101	43	71.5	0.77
San Simon	94	50	70.8	0.20
Show Low †				1.00
Signal †	97	51	73.1	0.25
Simmons				2.10
Springerville				1.05
Strawberry				1.00

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Arizona—Cont'd.				
Teviston				2.50
Texas Hill	108	58	78.7	0.00
Tip Top †			74.2	0.97
Tucson (1) †	99	51	75.5	0.22
Tucson (2) *	95	65	78.0	0.18
Walnut Grove				1.10
Whipple Barracks	86	32	57.8	0.27
Willcox *	97	49	72.2	0.87
Wilgus				0.85
Woodruff				0.30
Yuma	95	65	77.3	0.00
Arkansas.				
Arkadelphia †				3.54
Arkansas City †				2.17
Brinkley	88	40	66.0	1.31
Camden †	85	44	66.8	3.36
Conway	85	49	65.9	2.01
Dallas	88	39	65.1	3.63
Dardanelle				3.41
Devall Bluff	93	39	67.8	0.55
El Dorado	84	43	64.2	1.69
Fayetteville * †	86	36	62.6	3.17
Forrest City †	91	42	68.3	1.59
Fulton †				3.01
Helena (1)				3.02
Helena (2)	94	45	69.6	2.94
Hot Springs	90	39	65.4	5.37
Lead Hill *	97	38	64.6	1.97
Lonoke	91	45	70.6	1.31
Malvern	88	48	68.2	2.85
Monticello	90	42	69.4	3.70
Mount Nebo	82	44	65.6	3.74
Newport (1) †				1.79
Newport (2)	93	43	69.2	1.62
Osceola	89	45	66.9	2.46
Ozone	84	43	63.8	4.82
Paragould *m*	94	39	66.4	2.70
Pine Bluff	92	42	69.7	3.88
Prescott *k*	87	52	69.8	2.44
Rogers †	85	38	63.6	4.31
Russellville †	93	43	67.4	3.80
Stuttgart	89	42	67.2	1.55
Texarkana	89	41	67.3	2.29
Winslow	75	35	64.6	3.44
California.				
Alcalde *	97	53	72.5	0.00
Alcatraz Island	70	45	55.0	1.45
Almaden *	86	53	60.8	0.41
Anaheim *	83	54	66.6	0.40
Anderson	94	49	72.3	2.92
Angel Island	75	43	56.4	1.32
Antioch *r*	85	55	66.7	0.00
Aptos *	70	46	57.9	0.20
Arcata				0.75
Athlone *	93	51	68.4	0.00
Auburn	89	47	61.2	0.88
Bakersfield *	94	57	73.6	0.22
Ballast Point L. H.				0.60
Barstow	93	48	66.4	T
Belmont *	85	52	62.8	0.00
Benicia Barracks	85	47	59.0	0.67
Berendo *	96	55	60.9	0.00
Berkeley	78	47	55.6	1.61
Bishop Creek	95	38	67.2	2.90
Borden *	96	55	69.7	0.00
Boulder Creek	98	40	59.5	2.40
Brentwood	87	51	63.8	0.15
Brighton *	92	50	66.8	0.53
Byron *	86	56	69.0	0.38
Caliente	92	52	67.1	0.00
Calistoga *	84	46	60.8	1.70
Castroville *	80	53	61.8	0.28
Centreville *	93	56	64.1	1.10
Chico *	98	53	67.9	0.20
Cisco *	65	27	43.6	2.25
Colfax *	92	49	62.9	1.70
Colton *	88	48	63.3	0.90
Corning	92	48	68.4	1.15
Crescent City				5.47
Davisville *	98	55	72.0	0.70
Delano *	98	55	69.8	0.05
Delta *	90	53	67.9	4.70
Downey *	82	58	66.6	0.14
Dunnigan	86	48	66.1	1.75
East Brother L. H.				1.01
El Dorado *	91	51	63.3	0.93

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.				
Elmira	95	50	67.4	0.50
El Verano *	86	51	62.0	1.28
Emigrant Gap *	74	36	51.1	2.70
Esparto *	91	54	71.5	0.54
Evergreen				0.55
Farmington *	102	54	67.1	0.40
Farrallon L. H.				0.73
Felton *	85	41	59.5	1.24
Fernando *	81	42	63.4	0.98
Florence *	74	54	64.1	0.17
Folsom *	93	53	68.8	1.58
Fort Bidwell	79	24	53.2	1.57
Fort Gaston	90	36	60.0	3.10
Fort Mason	70	44	55.7	1.27
Fresno	98	55	71.6	0.03
Fruto *	90	53	70.3	1.22
Galt	94	54	70.5	0.49
Georgetown †	83	38	58.4	2.71
Gilroy *	89	50	60.1	0.04
Girard *	84	40	61.1	0.91
Goshen *	93	52	68.0	0.00
Grass Valley				2.06
Haywards *	73	50	59.9	0.55
Hollister *	90	47	62.2	0.05
Hornbrook *	85	45	64.1	2.40
Humboldt L. H.				1.51
Hydesville	77	40	55.2	2.19
Indio	103	60	76.9	0.00
Ione	91	54	65.7	0.20
Iowa Hill *	85	46	61.4	2.03
Jolon	97			0.02
Julian †	85	31	54.6	3.00
Keeler	90	55	74.5	0.37
Keene *	85	44	61.9	1.35
Kingsburgh *	90	55	70.1	0.00
King City *	88	42	65.3	0.00
Knight's Landing *	84	55	66.8	0.00
Lathrop *	90	48	69.3	0.10
Laurel *	88	43	59.2	0.95
Lemoore *	95	55	71.5	0.00
Lime Point L. H.				1.75
Livermore	90	48	58.8	0.40
Livingston *	93	53	69.1	0.00
Long Beach *	75	50	61.2	0.00
Los Angeles *	85	53	66.1	0.27
Los Banos *	86	45	67.3	0.00
Los Gatos (1) *	88	49	61.5	0.30
Los Gatos (2)	86	42	59.0	0.52
Mammoth Tank	105	60	81.2	0.00
Mare Island L. H.				1.07
Martinez *	78	50	58.6	0.54
Marysville *	90	50	69.8	0.67
Menlo Park *	88	50	61.1	0.38
Modesto *	96	53	71.4	0.24
Mohave *	94	50	72.3	0.00
Monson *	90	55	72.4	0.16
Montague *	90	49	62.5	1.74
Monterey *	66	46	56.4	0.09
Monterey (Hotel del Monte)	76	50	60.1	0.00
Napa City *	89	48	60.8	1.37
National City	73	51	60.6	0.83
Newark *	83	50	60.5	0.18
Newhall *	88	45	61.1	0.66
Newman *	93	60	74.9	0.10
Niles *	84	43	65.8	0.70
Norwalk *	85	52	65.5	0.26
Oakland (1)	75	45	55.3	1.60
Oakland (2) *	74	48	58.0	1.42
Ogilby	106	60	81.6	0.00
Ontario	87	50	67.3	0.35
Orland *	96	53	71.1	1.12
Oroville	98	53	65.7	1.30
Pajaro *	69	45	58.3	0.27
Palermo †	93	46	66.3	1.25
Paso Robles *	86	48	59.6	0.06
Pigeon Point L. H.				0.79
Placerville (1) *	88	50	64.1	1.23
Placerville (2) *	82	39	57.4	1.91
Pleasanton	89	48	62.6	0.04
Pt. Ano Nuevo L. H.				0.65
Point Bonita L. H.				2.26
Point Montara L. H.				1.45
Point Pinos L. H.				0.36
Point Sur L. H.				0.38
Pomona *	78	42	64.6	0.65
Portersville *	96	55	72.6	0.29
Presidio of San F.	74	40	55.4	1.26
Puente *	79	55	63.9	0.55
Ravenna *	88	47	58.6	0.00
Red Bluff	94	48	66.0	1.23
Redding *	95	50	71.9	3.17
Riverside	89	41	60.3	0.53
Rocklin *	96	53	70.1	0.55
Rumsey *	94	50	70.7	1.28
Sacramento (1)	86	43	59.6	0.66
Sacramento (2) *	90	54	66.0	0.34
Sacramento (3)	85	50	65.8	0.48
Salinas (1) *	70*d*	48*f*	56.6*d*	0.33
Salinas (2) *	76	48	57.9	0.40
Salton *	105	63	78.7	0.00
Sanger Junction *	100	50	75.4	0.00
San Ardo *	104	45	63.8	0.03
San Diego B'ks	83	48	62.3	0.35
San Gabriel *	83	53	63.4	0.88

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.				
San José *	87	50	60.0	0.26
San Luis L. H.				0.08
San Mateo *	79	50	59.2	0.35
San Miguel *	88	50	61.8	0.00
San Pedro *	86	55	68.5	0.00
Santa Ana *	88	50	65.3	0.00
Santa Barbara (1)	74	46	59.0	0.30
Santa Barbara (2) *	75	55	63.1	0.00
Santa Barbara L. H.				0.31
Santa Clara				0.17
Santa Cruz (1) *	70	48	57.8	0.83
Santa Cruz (2) *	73	42	57.8	0.60
Santa Cruz L. H.				0.70
Santa Margarita *	78	41	54.5	0.33
Santa Maria	78	41	57.4	0.20
Santa Monica *	74	56	66.2	0.43
Santa Paula *	82	55	66.5	0.13
Santa Rosa	80	42	60.8	1.23
Selma *	94	49	65.7	0.00
Seven Palms *	103	68	79.3	0.00
Shingle Springs *	80	50	64.3	1.60
Sims *	88	39	62.6	4.36
Soledad *	82	50	59.0	0.08
Sonoma	71	52	57.6	1.42
Soquel *	80	48	62.9	0.00
South Vallejo *	70	50	58.5	1.08
Spadra *	78	50	62.0	0.84
Steelest	77	43	58.0	0.15
Stockton (2)	88	52	65.4	0.30
Summit *	59	34	45.0	1.10
Suisun City *	93	52	61.7	0.94
Susanville	78	44	56.4	2.41
Tehachapi *	80	38	60.3	0.70
Tehama	92	55	72.8	1.96
Templeton *	86	50	59.9	0.12
Towles *	80	40	59.6	2.86
Tracy *	90	57	70.5	0.57
Traver	93	54	68.8	0.00
Trinidad L. H.				2.48
Truckee (1)	74	34	49.6	2.90
Tulare *	98	57	71.7	0.00
Turlock *	94	55	68.5	0.06
Upper Mattole	92	40	58.1	0.95
Vacaville (1) *	92	53	63.7	0.67
Vacaville (2) *	101	50	68.0	0.31
Vina *	87	50	60.4	0.70
Volcano Springs *	92	53	69.3	0.80
Volta *	110	59	80.5	0.00
Walla Walla Ck	96	55	65.6	0.01
Walnut Creek	79	32	50.6	3.28
Westley *	90	45	61.4	0.29
Wheatland	92	56	75.0	0.18
Whittier	92	46	63.8	2.10
Willow (1)	82	55	67.2	0.30
Willow (2)	91	45	65.0	2.70
Winters *	97	32	60.8	1.99
Woodland	97	57	72.0	0.75
Yerba Buena L. H.	84	47	67.5	0.43
Yreka †	85	30	56.8	0.09
Colorado.				1.48
Abbott †				4.76
Agate *	88	40	59.2	3.00
Akron * †	90	33	58.5	5.93
Almat e	61	2	38.3	2.78
Amherst †				3.40
Antonito	78	31	55.0	5.13
Apishapa †	68	38	54.2	2.49
Arboles †				2.81
Aroya				3.30
Aspen	83	24	52.5	1.02
Beaver Creek †				2.16
Bennet *	88	35	50.4	3.45
Box Elder †				5.15
Brandon				2.98
Breckenridge †	74	1	35.8	2.52
Brush †				8.67
Burlington †	89	10	47.3	.....
Byers *	79	39	56.2	.....
Cañon City †	85	36	62.2	1.58
Carson †	63	32	43.0	.....
Castle Rock †	84	30	56.4	3.06
Cheyenne Wells	92	40	58.7	3.10
Chromo	69	27	49.6	3.20
Climax * †	56	25	35.6	2.50
Como (near)	61	21	36.6	3.46
Crook	88	35	58.0	4.76
Cumbres	62	21	41.0	3.96
Del Norte	76	30	52.6	0.72
Deer Trail *	82	36	50.7	.....
Delta †	85	33	59.2	1.39
Dillon †				2.23
Dumont †				3.23
East Dale †				0.50
First View *	86	32	58.4	4.99
Fort Lewis	74	31	50.4	2.80
Fort Logan		33		3.68
Fruita †	90	35	62.4	1.51
Garnett				0.49
Georgetown	72	28	49.0	2.70
Granada				4.15
Greenhorn †	87	32	55.8	2.66
Haxtum †				3.52
Hugo *	82	36	54.7	.....
Husted †	81	31	53.9	3.61

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Colorado—Cont'd.	°	°	°	*Ins.*
Idaho Springs†	73	28	48.6	3.16
Jefferson†	64	29	37.8	3.11
Kirk†	.....	.....	.....	7.95
Kit Carson*	91	30	60.0	.....
Lamar†	93	35	62.3	4.55
La Porte	.....	.....	.....	3.53
Las Animas†	89	32	60.9	3.11
Lavender	.....	.....	.....	0.79
Lay†	.....	.....	.....	0.69
Leadville†	61	21	39.4	.....
Le Roy *†	85	33	55.8	5.02
Leslie	.....	.....	.....	5.78
Livermore	84	28	50.4	5.19
Magnolia*	92	40	58.8	2.77
Meeker	85	30	55.4	1.90
Minneapolis†	.....	.....	.....	2.56
Monte Vista (2)	78	28	50.8	0.69
Montrose (near)	.....	.....	.....	1.81
Moraine	72	22	46.2	3.26
Pagoda (near)*	83	27	52.4	1.80
Pagosa Springs	77	28	49.4	4.21
Parachute†	.....	.....	.....	1.31
Paradox	.....	.....	.....	1.24
Red Cliff†	.....	.....	.....	1.74
Rico*†	.....	.....	.....	4.15
River Bend *	82	40	59.0	.....
Rocky Ford†	89	31	61.2	3.52
Saint Cloud†	.....	.....	.....	0.55
Sanborn†	.....	.....	.....	5.26
San Luis†	80	28	52.5	2.14
Sedgwick	.....	.....	.....	2.84
Sheridan Lake*†	88	36	61.0	1.78
Smoky Hill Mine†	75	27	49.0	5.49
Springfield	.....	.....	.....	3.13
Stamford†	.....	.....	.....	0.68
Stunner†	69	16	42.4	2.61
T. S. Ranch †	84	35	59.6	1.35
Thon †	90	27	54.8	3.88
Vilas	.....	.....	.....	2.66
Villa Grove†	.....	.....	.....	5.00?
Ward District†	.....	.....	.....	4.46
Watervale †	.....	.....	.....	2.08
Watkins	76	38	54.2	.....
Wray	.....	.....	.....	2.02
Yuma†	.....	.....	.....	4.21
Connecticut.				
Canton	86	27	56.2	2.03
Colchester	82	29	55.5	.....
Falls Village	.....	.....	.....	1.73
Fort Trumbull	84	28	56.8	1.48
Hartford (1)	85	29	57.0	2.43
Hartford (2)	.....	.....	.....	1.99
Lake Konomoc	.....	.....	.....	1.36
Lebanon	.....	.....	.....	2.62
Mansfield	83	28	54.1	2.50
Meriden	.....	30	.....	.....
Middletown	84	30	56.4	1.62
New Hartford (1) *.	84	30	54.2	2.34
New Hartford (2)	.....	.....	.....	2.29
Newington	.....	.....	.....	1.79
N. Grosvenor Dale.	81	30	55.8	1.91
North Woodstock	.....	.....	.....	2.50
Norwalk	83h	31h	50.8h	2.08
Southington*	80	28	56.2	1.34
South Manchester	.....	.....	.....	1.36
Stevenson	.....	.....	.....	1.13
Thompson	81	30	53.4	.....
Voluntown*	81	29	55.6	2.03
Wallingford	.....	.....	.....	2.34
Waterbury	86	32	56.5	1.84
West Simsbury	.....	.....	.....	1.84
Delaware.				
Dover	89	32	60.5	2.49
Kirkwood	88	42	62.4	.....
District of Columbia.				
Kendall Green	84	42	61.4	4.07
Washington B'ks	89	40	63.7	4.01
Florida.				
Alva†	93	52	73.8	1.19
De Land (1)	93	49	75.6	2.85
De Land (2)	88	50	71.3	.....
Duke	91	47	69.6	6.20
Eustis*	94	56	74.0	2.25
Fort Barrancas	95	49	74.6	2.23
Fort Meade*	88m	49m	73.4m	1.03
Gainesville	92	55	74.4	3.09
Hypoluxo*	90	62	77.6	3.62
Lake City	94	47	74.5	1.57
Merritt's Island†	90	62	75.4	1.63
Ocala	88f	.....	72.5f	6.67
Orange City	92	55	73.2g	2.92
Pasadena†	91	52	73.4	3.56
St. Francis B'ks	89	55	72.2	5.37
St. Petersburg†	91	58	74.9	0.05
San Antonio*	91	.....	75.8	1.42
Tallahassee	89g	51e	72.7h	0.90
Tarpon Springs	87	53	73.7	0.18
Georgia.				
Albany	96	46	76.3	1.00
Allapaha	92	42	71.7	1.87
Americus	102	40	73.4	1.00
Athens (1)	89	44	67.3	2.84
Athens (2)	91	41	67.2	2.89
Bainbridge	92	46	72.6	2.41
Blakely	90	53	71.6	0.96
Butler*†	98	48	76.0	1.20
Camak	92	40	69.6	4.05
Cartersville	90	43	68.2	1.21
Columbus	88	49	69.8	2.61
Cordele†	98	40	72.2	3.13
Eastman	96	44	73.0	0.09
Elberton†	91	39	70.6	2.54
Forsyth*	92	52	72.0	2.29
Fort Gaines	92	36	66.8	3.15
Gainesville	88	38	64.3	1.48
Gillsville	88	48	69.0	2.86
Griffin	94	44	70.9	4.40
Hephzibah	89	52	72.4	2.40
Louisville	97	41	71.7	1.01
Macon	92	45	70.5	3.25
Marietta†	88	39	65.5	1.46
Milledgeville*†	90	43	69.4	3.02
Millen	94	38	70.2	3.62
Monticello	80	54	67.2	1.82
Newman	93	39	66.8	2.84
Point Peter*	.....	42	64.2	2.95
Poulan	96	41	72.4	1.09
Quitman (1)	94	51	73.9	0.60
Quitman (2)	94	46	73.2	0.45
Rome†	.....	.....	.....	0.78m
Toccoa	94	40	67.6	2.90
Union Point	95	38	69.4	1.89
Washington	93	41	69.9	3.85
Waynesborough	97	41	71.4	3.62
West Point	90	52	72.4	2.27
Idaho.				
Bonanza	74	20	46.0	3.10
Era†	78	25	52.2	0.88
Fort Sherman	87	32	57.9	1.36
Kootenai	91	30	57.0	1.26
Mullan*	85	30	52.0	1.41
Payette†	93	29	64.4	1.10
Placerville	94	20	51.6	1.20
Illinois.				
Alton	.....	.....	.....	3.78
Atwood	90	30	.....	1.46
Aurora (1) †	80	30	53.2	2.14
Aurora (2)	84	33	56.6	2.28
Beardstown†	.....	.....	.....	3.85
Beason	82	31	58.0	1.05
Belvidere	80	37	55.4	2.64
Carlinville*	89	44	60.0	2.56
Centralia	92	.....	59.0	3.09
Collinsville	88	36	61.9	2.26
Cockrell	86	36	58.0	2.82
East Peoria	86	34	60.6	1.93
Flora	92	32	64.0	3.55
Fort Sheridan	83	32	54.4	2.25
Golconda	86	47	63.4	3.05
Greenville	90	31	60.6	2.63
Griggsville*	89	38	60.2	2.42
Hennepin	85	30	56.2	2.68
Irishtown	.....	.....	.....	3.18
Jordan's Grove	87	34	62.1	2.87
Lacon*	80	40	58.3	1.55
Lanark	80	34	55.9	3.22
Louisville	86	36	60.9	2.00
Martinsville	85	32	58.7	0.72
Mascoutah	90	34	58.6	2.60
Mattoon	85	39	.....	0.60
McLeansborough	93	34	61.2	1.92
Mount Carmel†	.....	.....	.....	3.19
Olney (1)*	88	36	62.9	1.30
Olney (2)	89	40	60.7	1.56
Oswego*	82	28	54.6	1.97
Ottawa†	84	33	57.8	1.84
Palestine	86	32	59.3	0.76
Pana	89	43	64.3f	0.66
Peoria (1)†	.....	.....	.....	2.03
Peoria (2)	83	38	62.0	1.97
Philo	87	28	59.7	1.14
Pontiac	82	28	57.4	0.47
Riley*	81	30	55.3	4.38
Rockford	81	32	56.6	2.75
Rock Island Ars'l	83	30	57.8	2.71
Rushville	88	34	60.2	4.74
Sandwich	80	29	54.5	1.57
South Evanston	83	31	.....	3.12
Sycamore*	79	29	54.6	2.79
Warren	82	36	.....	.....
Warsaw	.....	.....	.....	2.50
White Hall*	86	29	63.8	1.83
Winnebago	80	30	56.7	2.50
Indiana.				
Angola	87	31	58.5	1.72
Butlerville*	83	40	61.7	1.52
Columbia City	84	31	58.5	1.26
Columbus	86	36	58.6	0.97
Connersville	83	30	56.9	2.20
De Gonia Springs	81	35	61.8	1.16
Delphi	81	26	57.3	1.38
Evansville	.....	.....	.....	0.83
Farmland	84	32	59.0	2.47
Franklin	88	38	59.0	0.87
Huntingburgh	86	46	62.0	6.30
Huntington†	.....	.....	.....	1.43
Jeffersonville	84	37	62.7	1.73
La Fayette	84	27	58.9	1.98
Logansport (1)	.....	.....	.....	2.67
Logansport (2)	85	30	58.0	1.12

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Indiana—Cont'd.	°	°	°	*Ins.*
Marengo	84	35	63.3	1.50
Marion†	82	29	56.9	0.65
Mauzy*	86	28	57.0	2.41
Michigan City	87	27	56.2	.....
Mount Vernon (1)	.....	.....	.....	1.22
Mount Vernon (2)	88	36	62.7	1.04
Muncie	87	44	64.4	2.10
Point Isabel	88	25	58.0	1.40
Princeton	85	40	62.0	2.10
Richmond	83	30	57.1	0.88
Rockville	90	31	61.8	0.99
Rushville†	.....	.....	.....	1.42
Seymour	86	35	62.0	1.71
Shelbyville	83	35	62.3	0.65
Valparaiso	.....	23	.....	2.78
Vevay	86	34	61.4	2.59
Vincennes	.....	.....	.....	1.16
Worthington	84	32	60.3	0.46
Indian Territory.				
Eufaula	.....	.....	.....	4.50
Fort Supply	90	35	64.5	3.75
Healdton	840	540	68.80	5.85
South McAlester	.....	.....	.....	5.09
Tulsa†	.....	.....	.....	5.00
Woodward	.....	.....	.....	1.02
Iowa.				
Alta (1)*	85	35	57.3	2.92
Alta (2)	85	34	60.8	2.92
Amana†	86	29	57.0	4.83
Ames	83	33	58.6	2.25
Atlantic	85	23	57.2	6.68
Audubon	.....	.....	.....	4.52
Bancroft	82	27	58.1	1.46
Bedford†	.....	.....	.....	3.36
Belle Plaine*	83	33	57.9	4.21
Bonaparte*	82	40	64.1	2.78
Blakeville	88	33	58.5	4.04
Carroll†	84	28	56.3	5.44
Cedar Falls†	80	26	54.7	2.66
Cedar Rapids†	82	33	57.7	4.11
Charles City	82	30	53.0	1.87
Clarinda*	84	37	59.2	3.19
Clinton	82	31	58.7	3.57
College Springs	.....	.....	.....	3.30
Cordova	.....	.....	.....	4.86
Corning	.....	.....	.....	2.60
Cresco	83	27	56.1	1.58
Dallas Centre*	.....	40	58.1	3.51
Delaware*	.....	33	55.1	2.86
Denison	84	37	60.4	4.84
Des Moines	89	32	59.7	3.82
Eagle Grove	.....	34	58.5	2.40
Fairfield†	86	32	59.6	2.52
Fontanelle	.....	.....	.....	3.37
Fort Madison*	83	40	63.2	1.86
Glenwood (1)	94	36	62.7	4.84
Grand Meadow d	78	34	56.0	1.50
Greenfield	85	32	58.1	2.98
Grinnell†	78	34	57.9	3.44
Grundy Centre*	81	36	57.6	2.29
Hampton	82	28	55.7	2.06
Hopeville	82	41	58.5	3.93
Hopkinton	82	34	58.0	2.70
Humboldt*	84	25	56.7	3.05
Independence*	76	37	58.0	3.32
Indianola	80d	21d	53.2	5.42
Iowa City	82	33	58.6	4.46
Larrabee	88	34	57.0	2.73
Le Claire†	.....	.....	.....	2.92
Leon	85	32	59.9	4.31
Logan†	90	35	61.2	3.93
Ludlow	.....	36	.....	1.80
Mason City †	82	30	56.9	1.41
Maxon*	83	36	61.0	4.01
Maquoketa*	85	39	56.4	3.79
Marshalltown	82	27	56.9	2.06
McCausland	78	37	55.5	3.26
Monticello *	83	31	58.0	2.70
Mount Pleasant*†	83	45	61.0	2.69
Mount Vernon*	83	36	60.0	7.10
Murray †	81	36	58.2	3.77
Muscatine (2)	83	34	58.6	2.51
Osage*	.....	34	54.7	1.75
Oskaloosa (1) *	86	34	60.3	3.62
Panama	84	33	56.5	2.57
Richland*	.....	39	58.4	2.11
Sac City	82	28	54.8	3.25
Sanborn	88	.....	61.0	2.04
Stilson	84	36	57.0	2.00
Storm Lake	84	36	57.6	2.88
Vinton *	79	34	56.7	3.48
Washington *	84	34	60.9	1.65
Webster City *	90	32	56.8	2.62
West Bend*†	83	32	57.3	2.63
Williams *	85	30	56.9	2.47
Windsor	.....	.....	.....	1.55
Winterset †	84	34	61.0	3.61
Kansas.				
Allison*	94	37	60.6	6.20
Altoona	86	34	64.6	2.79
Bucklin	.....	.....	.....	7.90
Buffalo Park	90	.....	.....	5.50
Burr Oak	88	32	.....	2.75
Cawker City	88	36	62.3	3.40
Collyer	95	43	.....	4.00
Columbus	.....	.....	.....	4.05
Concordia	87	30	59.4	4.00
Cunningham*	90	32	62.0	4.45
Downs	.....	.....	.....	4.54
Dwight	.....	.....	.....	4.80
Elco	89	34	62.1	5.85
Elk Falls†	89	40	66.2	4.34
Ellis	90	32	.....	4.25
Emporia	86	37	61.4	6.20
Englewood*	94	46	67.1	5.33
Eureka Ranch	95	29	64.0	2.05
Ft. Leavenworth (1)	86	35	60.7	7.40
Ft. Leavenworth (2)	82	40	59.9	6.50
Fort Riley	85	35	62.1	5.15
Fremont	90	30	63.6	4.36
Globe*	.....	43	59.4	6.81
Gove City*†	95	44	60.9	3.46
Grainfield	88	40	.....	6.08
Grenola	89	41	64.1	3.00
Grinnell	90	44	.....	5.50
Halstead	83	30	60.8	5.09
Havensville*	87	30	58.4	5.25
Horton	87	40	60.9	4.57
Independence	90	38	64.8	3.36
Kansas City	86	36	61.0	6.42
Kellogg	89	34	64.0	10.25
Kingman	.....	.....	.....	3.79
Kirwin †	.....	.....	.....	4.25
La Crosse	90	38	62.8	3.28
La Harpe*	.....	.....	62.6	3.31
Lakin	93	30	61.4	3.15
Lawrence	88	38	61.2	6.55
Lebo	89	31	60.8	7.06
Leoti	93	36	61.8	2.00
Macksville*	95	32	62.1	3.62
Manhattan (1)†	.....	.....	.....	5.79
Manhattan (2)	89	30	60.9	4.79
Manhattan (3)*	93	36	62.2	6.09
Mankato	89	40	58.6	3.00
McAllaster	90	45	.....	3.75
McPherson	.....	.....	.....	7.58
Minneapolis	86	38	61.3	4.60
Monument	96	40	.....	3.90
Morse	85	36	59.8	6.15
Morton	.....	.....	.....	5.23
Oakley	92	.....	.....	4.50
Oberlin †	.....	.....	.....	6.70
Ogallah	90	40	.....	3.17
Oswego	90	38	64.2	2.83
Page City	92	40	59.8	1.50
Painter	89	47	.....	4.62
Pauline	92	32	61.4	7.31
Planeville	88	.....	.....	3.38
Pleasant Dale	92	27	59.0	2.70
Quinter	90	44	.....	3.50
Rome	86	37	62.7	6.42
Salina *	87	39	62.2	6.63
Sedan*	89	39	63.7	2.54
Seneca	84	37	59.1	5.92
Sharon Springs	90	37	.....	3.50
Shields	90	33	63.2	3.70
Springvale	96	32	64.5	8.00
Stafford*	87	40	63.4	5.52
Sterling a†	89	24	62.0	3.08
Tribune†	90	35	59.6	2.94
Wakefield*	95	36	62.6	5.51
Wa Keeney	90	42	63.6	2.40
Wallace (1)	.....	.....	.....	2.00
Wallace (2)	82	40	.....	2.51
Wellington	90	33	66.9	8.90
Weskan	.....	.....	.....	2.27
Yates Centre	.....	.....	.....	4.66
Kentucky.				
Bowling Green†	87	37	65.5	0.76
Burkesville	.....	.....	.....	1.79
Burnside†	.....	.....	.....	1.51
Caddo	84	29	61.7	0.80
Catlettsburgh †	.....	.....	.....	1.15
Canton*	90	42	63.5	2.52
Central City	.....	.....	.....	1.38
Earlington	89	39	66.0	1.68
Edmonton	84	33	61.8	0.97
Falmouth (1)†	.....	.....	.....	1.75
Fort Thomas	89	33	59.8	1.18
Frankfort (1)†	.....	.....	.....	3.10
Frankfort (2)	88	30	60.4	3.10
Franklin *†	88	45	64.8	1.90
Georgetown†	83	30	60.8d	1.59
Greensburgh †	.....	.....	.....	0.65
Harrodsburgh †	87	29	61.4	1.27
Louisa †	.....	.....	.....	4.39
Middlesborough†	87	30	60.0	3.96
Mount Sterling †	85	35	59.6	1.01
Newport Barracks	85	32	59.2	1.15
Paducah	.....	.....	.....	1.88
Pellville†	85	32	60.9	1.40
Princeton†	90	31	63.1	1.60
Richmond	90	30	62.3	1.13
Shelbyville †	87	30	60.0	3.41
South Fork	.....	.....	59.7	2.00
Williamsburgh	.....	.....	.....	1.80
Louisiana.				
Abbeville	88	46	73.2	1.45
Alexandria†	92	40	70.4	0.16
Amité City	92	44	71.2	3.21

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Louisiana—Cont'd.	°	°	°	*Ins.*
Baton Rouge	94	48	73.8	0.85
Cheneyville	93	42	72.4	1.47
Coushatta (1) †				2.27
Coushatta (2)	91	40	71.8	2.02
Davis	91	39	68.8	0.24
Delhi †				0.19
Edgard	89	56	73.4	0.40
Emilie	91	48	72.6	0.73
Girard				0.24
Grand Coteau	87	45	70.4	1.20
Homer	89	48	69.4	0.86
Jackson Barracks	90	47	71.0	0.24
Lafayette	92	43	72.1	0.52
Lake Charles	92	43	69.2	0.10
Lawrence	89e	53e	74.6e	0.55
Liberty Hill	93	42	70.0	1.63
Luling	90	50	75.2	1.17
Mandeville	95	43	74.0	1.01
Marksville	93	42	69.6	T.
Maurepas	90	45	70.6	0.60
Melville †	90	51	73.1	0.13
Minden	91	43	70.4	0.75
Monroe †	91	44	70.3	1.15
Natchitoches	91	41	70.3	2.06
New Iberia	89	50	72.6	1.60
Paincourtville	94	47	72.7	0.74
Plaquemine	91	39	73.6	0.43
Shell Beach	89	50	73.0	1.12
Sugar Ex. Station	90	52	71.8	2.37
Thibodeaux				0.66
Winnsborough	92	38	70.0	0.70
Maine.				
Bar Harbor	70	32	49.7	1.57
Belfast*	72	40	50.5	.....
Calais	73	29	50.6	2.82
Cornish	82	35	54.6	2.87
Fairfield	79	24	51.6	2.26
Farmington*	.....	35	50.1	1.94
Fort Preble	70	27	50.2	3.00
Kennebec Arsenal	69	30	50.8	1.20
Kent's Hill	75	30	51.0	1.98
Lewiston	74	32	50.9	2.60
Mayfield	77	24	49.0	2.37
Orono †	76	30	51.2	2.83
Petit Menan *	58	35	45.3	.....
West Jonesport	61	34	46.5	.....
Maryland.				
Barren Creek Sp'gs†	86f	36f	61.1f	3.91
Cumberland (1)	88	38	60.9	2.57
Cumberland (2)	91	42	64.2	2.51
Fort McHenry	82	36	60.4	2.63
Frederick	89	38	62.0	2.30
Gaithersburgh*	86	41	57.6	2.00?
Jewell			63.6	5.50
Leonardtown	86	41	60.0	0.17
McDonogh	89	37	61.4	4.73
Mt. St. Mary's Col	88	40	61.3	2.45
Taneytown †				2.69
Woodstock	88	36	60.6	4.56
Massachusetts.				
Amherst	84	25	55.8	1.81
Amherst Ex Sta (1)	86	25	55.2	1.82
Amherst Ex Sta (2)	87	25	55.6	1.97
Andover	88	30	53.6	2.37
Ashland				1.85
Blue Hill (sum't)	85	99	54.2	2.39
Blue Hill (base)	86	30	55.5	2.27
Blue Hill (valley)	87	26	54.6	2.12
Boston				2.69
Cambridge (1)	81	31	54.6	2.10
Cambridge (2)	80	33	55.8	2.44
Chestnut Hill	88	30	57.2	2.05
Chicopee				1.82
Clinton				2.08
Concord	87	28	53.3	1.63
Cotuit	74	31	52.6	2.62
Deerfield	88	36	57.3	.....
Dudley *	87	27	56.0	1.24
Fall River (1)*	80	32	53.7	2.70
Fiskdale				2.23
Fitchburg (1)	82	35	55.6	1.79
Fitchburg (2)	88	29	55.7	1.76
Florida *	85	25	50.6	2.30
Fort Warren	78	34	54.6	2.71
Framingham	85	30	57.3	2.17
Gilbertville	84	26	52.5	2.68
Groton (1)	84	30	56.4	2.36
Groton (2)	86			
Heath*	84	26	56.6	.....
Kendall Green	83	34	56.4	1.32
Lake Cochituate	91	25	57.4	1.67
Lawrence	89	30	57.0	2.48
Leicester	83	27	54.0	1.55
Leominster				2.34
Long Plain*	81	26	56.3	2.04
Lowell (1)	84	31	55.5	2.29
Lowell (2)	88	28	54.4	.....
Lowell (3)	90	29	55.2	.....
Ludlow (1)	83	22	53.4	1.55
Ludlow (2)	86	26	56.0	2.60
Lynn	79	29	53.3	2.29
Mansfield	87	37	56.0	1.03
Medford				2.46
Middleborough	82	24	54.0	2.19
Milton*	79	34	53.3	2.03

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Massachusetts—Con.	°	°	°	*Ins.*
Monson	86	22	55.1	1.86
Mount Nonotuck	.....	.....	.....	1.97
Mystic Lake	.....	.....	.....	2.35
Mystic Station	.....	.....	.....	2.31
Nahant	74	32	51.7	.....
New Bedford (1)	77	30	52.2	2.42
New Bedford (2)	78	31	54.1	2.22
Newburyport (1)	80	32	54.8	2.39
Newburyport (2)	.....	.....	.....	2.25
Northampton	79	31	57.0	2.32
North Billerica	89	30	56.2	2.53
Plymouth	81	39	56.4	1.99
Princeton	.....	26	.....	2.10
Provincetown	75	33	53.6	1.69
Randolph	.....	.....	.....	1.50
Roberts' Dam	.....	.....	.....	1.70
Royalston*	.....	.....	.....	4.25
Salem (2)	.....	.....	.....	1.67
Somerset*	88	34	58.7	2.09
South Hingham	.....	26	.....	1.90
Springfield Armr'y	86	31	57.6	2.18
Taunton (1)	85	28	55.7	2.56
Taunton (2)	84	28	56.0	2.60
Taunton (3)	84	24	55.0	2.36
Taunton (4)	87	25	56.1	2.62
Wakefield	84	29	55.7	2.35
Waltham	.....	.....	.....	1.93
Wellesley	87	28	55.9	1.63
Westborough*	92	28	58.7	1.85
Winchester*	.....	.....	.....	2.37
Worcester (2)	84	29	55.4	.....
Michigan.				
Adrian†	83	28	55.6	1.94
Albion (1)	78	29	56.6	2.02
Allegan	83	26	55.2	2.05
Alma †	82	23	54.3	1.32
Ann Arbor	80	28	56.3	2.00
Arbela	.....	.....	.....	0.58
Atlantic* †	69	27	43.3	0.05
Ball Mountain †	81	26	53.2	1.48
Bangor	88	31	57.3	1.87
Bear Lake †	80	18	49.6	0.35
Bellaire †	82	22	50.2	0.30
Bell Branch	80	30	54.2	1.27
Benton Harbor	89	33	58.2	2.59
Benzonia	79	25	50.1	0.49
Berrien Springs (2)	.....	.....	.....	2.98
Birch Run †	.....	.....	.....	0.82
Birmingham	84	27	55.6	1.17
Bronson	80	27	52.2	1.54
Buchanan †	78	29	55.3	1.71
Calumet †	82	25	48.7	0.42
Caldwell †	83	20	51.0	0.28
Charlevoix †	80	31	52.7	0.25
Cheboygan †	83	22	48.6	0.20
Clinton †	84	26	55.0	2.50
Colon	80	30	52.7	2.36
Concord †	81	27	54.2	1.44
Crystal Falls †	82	21	48.5	0.65
Deerfield †	83	31	55.5	1.77
Eden †	85	25	56.8	1.87
Evart †	80	17	44.3	1.13
Fairview †	79	30	54.4	2.25
Fitchburgh †	81	26	54.0	2.28
Flint †	82	24	54.0	2.30
Fort Brady	76	26	47.7	0.40
Fort Mackinac	69	27	43.0	0.80
Fort Wayne	85	26	55.0	1.48
Fremont * †	82	24	54.1	1.38
Gaylord †	82	17	50.8	0.05
Gladwin	85	22	50.5	0.25
Grape †	80	30	56.4	1.77
Grayling †	82	20	51.0	0.25
Gulliver Lake	76	25	46.9	0.02
Hanover †	79	28	55.3	2.15
Harbor Springs †	79	20	49.3	T.
Hart †	83	30	58.4	1.35
Hastings	78	28	54.8	2.07
Hayes †	82	30	53.3	0.84
Highland Station* †	86	26	55.4	1.79
Hillman †	87	19	51.7	T.
Hillsdale †	80	28	57.0	2.37
Holt †	.....	.....	.....	2.14
Howell †	83	26	54.3	2.06
Hudson	82	24	52.0	1.83
Ivan †	82	24	52.1	0.74
Jackson	90	28	54.7	.....
Jeddo †	82	25	53.3	0.97
Kalamazoo †	80	32	57.0	3.06
Lansing	80	26	55.8	1.84
Lathrop	85	22	51.4	0.09
Madison	83	31	55.8	1.66
Marshall †	85	28	55.7	2.31
May †	84	24	54.6	1.21
Montague †	78	29	52.3	1.19
Mottville †	84	29	55.4	1.45
Noble †	78	32	57.2	1.68
North Aurelius	.....	.....	.....	2.15
North Marshall †	79	23	52.4	2.31
Northport †	82	26	50.2	0.04
Olivet †	76	25	53.1	1.90
Otsego †	85	27	55.7	2.05
Ovid †	83	25	55.0	1.75
Parkville †	.....	.....	.....	2.50
Paw Paw †	84	26	54.3	1.92

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Michigan—Cont'd.	°	°	°	*Ins.*
Pontiac †	79	30	55.5	2.17
Pulaski *	80	30	53.5	2.26
Rawsonville *	84	30	56.3	1.37
Rochester	.....	.....	.....	1.59
Rockland	87	18	52.7	0.26
Romeo	81	26	55.9	1.66
Roscommon †	83	20	51.1	0.31
Saint Ignace †	74	27	47.6	0.37
Saint John's †	82	25	56.0	1.40
Sand Beach †	80	28	48.8	0.52
Stanton †	83	20	51.5	1.16
Stockbridge †	.....	.....	.....	1.80
Thornville †	84	28	56.1	1.10
Vandalia †	79	31	55.6	2.19
Vienna †	.....	.....	.....	0.29
Washington †	83	25	54.5	1.97
Weldon Creek †	82	20	52.1	0.29
White Pigeon	81	24	53.6	2.06
Williamston †	80	30	59.1	1.75
Ypsilanti	77	26	51.4	2.04
Minnesota.				
Alexandria †	.....	.....	.....	2.90
Alma City †	84	26	57.3	0.86
Crookston	94	19	54.4	2.90
Faribault	86	24	57.8	1.50
Farmington	80	28	57.9	2.00
Fergus Falls †	.....	.....	.....	2.54
Fort Ripley †	.....	.....	.....	1.17
Fort Snelling	85	25	57.6	1.30
Grand Meadow	86	30	52.8	1.33
Kinbrae *	91	25	58.0	1.75
L. Winnibigoshish	86	28	53.0	1.49
Leech Lake	89	15	53.2	1.13
Le Sueur*	87e	32e	61.4e	1.19
Mankato	84	29	58.8	1.28
Minneapolis *	84	36	58.8	1.54
Montevideo	89	26	57.5	1.98
Morris	89	25	57.8	1.84
Northfield	83	25	57.4	1.60
Ortonville †	.....	.....	.....	1.83
Pine River	85	28	54.5	0.89
Pokegama Falls	83	15	50.8	0.59
Red Wing	84	31	58.4	1.46
Redwood Falls †	.....	.....	.....	2.97
Rolling Green	86	24	56.3k	2.70
Saint Charles *†	81	34	59.0	1.67
Sheldon*	.....	.....	57.8	1.06
Mississippi.				
Aberdeen	94	38	66.2	2.17
Agricultural Col'ge	90	47	70.3	1.78
Batesville	91	40	68.2	3.29
Bay Saint Louis	87	53	73.8	2.50
Booneville	90	42	70.2	0.58
Brookhaven †	91	39	68.6	7.16
Canton †	88	46	69.5	1.51
Columbus (1)	.....	.....	.....	2.14
Columbus (2)	100	45	72.4	2.29
Corinth	96	40	70.2	2.35
Edwards	92	45	71.3	2.04
Enterprise	92	40	70.4	0.77
Fayette	91	46	71.6	0.75
Greenville	91	48	71.4	3.42
Hattiesburgh	93	49	73.6	4.14
Hazlehurst	91	42	70.6	5.55
Hernando	88	44	69.3	0.93
Holly Springs (1)*	90	46	69.8	1.30
Holly Springs (2)	90	41	68.1	1.20
Jackson	92	44	70.5	1.21
Kosciusko †	91	42	68.4	T.
Lake k	90	42	68.0	0.60
Logtown †	90	48	72.2	0.21
Louisville †	96	38	69.0	2.49
Macon	94	46	70.0	3.22
Moss Point †	94	48	74.2	1.58
Natchez	92	45	71.8	0.90
Okolona	96	40	70.0	2.23
Port Gibson	91	40	70.0	1.10
Ship Island	94	58	76.6	0.07
Vaiden	96	40	69.8	2.53
Washington †	92	44	70.6	0.43
Water Valley *	93	42	69.5	0.29
Waynesboro' (1) †	93	42	69.0	0.50
Waynesboro' (2)	93	41	71.1	0.66
West Point	87	56	71.6	3.75
Yazoo City †	.....	.....	.....	1.65
Missouri.				
Adrian †	88	28	57.2	5.11
Appleton City	90	37	63.2	4.79
Austin † *	88	46	62.1	3.50
Boonville	.....	.....	.....	2.93
Brunswick	92	34	61.6	5.60
California	92	44	63.1	5.00
Cape Girardeau	.....	.....	.....	3.95
Carrollton	89	39	60.8	7.25
Carthage	84	44	62.6	3.42
Centreville	88	27	.....	3.11
Columbia	91	32	61.5	4.29
Conception	84	38	59.4	5.28
Concordia	90	.....	.....	1.42
Dadeville	.....	.....	.....	2.89
Darksville	90	38	62.8	6.65
Dunnegan	.....	.....	.....	2.90
East Lynn	89d	41d	62.6	5.17
Eight Mile *	85	38	60.8	4.41
Eldon *	90	36	63.1	3.60

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Missouri—Cont'd.	°	°	°	*Ins.*
Excelsior Springs*	86	31	58.6	5.40
Fayette	88	32	61.2	5.31
Fox Creek	84	36	64.3	3.88
Glasgow	88	32	60.8	4.11
Gordonville *	88	37	63.0	4.65
Grand Pass	.....	36	57.4	6.96
Harrisonville †	90	.....	61.7	5.70
Hermann *	83	.....	.....	4.44
Jefferson Barracks	92	29	62.4	3.10
Jefferson City	90	30	63.8	3.17
Jerome	.....	.....	.....	4.06
Kansas City	90	36	62.3	5.17
Lamonte (2)*	.....	46	.....	3.51
Langdon	.....	.....	.....	4.19
Lebanon *	84	40	64.2	3.13
Liberty	92	33	61.3	6.00
Louisiana Bridge †	.....	.....	.....	1.87
Marshall (2)	.....	36	.....	3.09
Mine La Motte	83	36	59.6	2.62
New Haven *	92	40	63.2	4.10
Oak Ridge *	93	40	68.5	2.80
Oregon (1)	85	39	60.2	7.68
Oregon (2)	87	40	60.2	6.06
Pickering	.....	30	51.6	3.79
Platte River *	86	32	60.9	7.53
Princeton *	88	34	60.6	5.21
Saint Charles (2)	87	34	58.9	2.60
Saint Joseph †	.....	.....	.....	6.30
Saint Louis	87	32	60.4	4.41
Sarcoxie	87	34	61.6	5.19
Sedalia	89	37	62.3	3.05
Shelbina	.....	.....	.....	4.70
Stellada	86	36	63.0	3.94
Warrenton	91	32	61.6e	3.84
Wither's Mills*	.....	.....	.....	4.20
Zeitonia	.....	.....	.....	2.62
Montana.				
Camp Poplar River	92	15	55.0	1.55
Choteau	90	21	53.0	2.30
Fort Assinniboine	92	21	54.9	3.69
Fort Custer	94	27	56.5	1.39
Fort Keogh	97	23	56.7	1.59
Fort Missoula	87	30	55.4	1.97
Fort Shaw	91	23	53.4	3.40
Glendive †	108?	24	60.2	2.25
Martinsdale	88	22	53.3	1.90
Powder River	94	22	55.1	1.61
Virginia City	83	19	51.8	1.37
Nebraska.				
Ansley †	97	32	60.1	1.90
Arborville *	87	39	59.2	2.65
Ashland	86	34	60.9	3.79
Auburn (1)	84	36	61.5	4.67
Bassett	100	32	59.2	2.01
Beatrice †	85	35	59.3	2.02
Beaver City *	90	42	59.7	4.90
Burwell*	90	34	60.4	0.42
Creighton * †	91	33	56.8	3.05
Crete	84	36	58.5	3.57
Culbertson (1)	.....	.....	.....	5.04
Culbertson (2)	90k	42g	65.3k	5.64
David City	84	34	55.5	2.45
De Soto *	85	33	59.5	4.30
Dunning	92	34	60.1	2.20i
Ericson *	90	36	60.3	0.61
Fairbury *	89	.....	.....	4.46
Fairfield	90	36	56.0	4.13
Fort Niobrara	97	20	54.8	0.80
Fort Omaha	92	35	61.2	5.09
Fort Robinson	87	25	56.6	2.05
Fort Sidney	86	33	57.1	3.94
Franklin	88	32	60.8	4.04
Fremont*	86	36	59.8	2.61
Geneva	.....	.....	.....	4.30
Genoa †	87	37	59.0	3.15
Gering	87	32	56.3	2.95
Grand Island	.....	.....	58.0	2.39
Grant	.....	.....	.....	2.80
Harvard	84	36	57.7	4.60
Hastings	88	36	.....	5.12
Hay Springs	90	24	55.4	2.33
Holdrege	.....	.....	58.6	3.26
Imperial	87	37	60.8	4.00
Kimball	88	29	57.0	3.47
Lexington*	91	32	59.7	3.44
Lincoln	91	35	59.8	3.77
Long Pine	100	28	60.4	1.33
Marquette *	89	38	.....	3.70
Nebraska City	.....	.....	55.4	1.83
Norfolk	89	31	56.6	0.70
North Loup * †	88	32	60.5	1.52
Oakdale	87	34	58.5	1.32
O'Neill	89	34	59.0	1.99
Ongh (2)	.....	.....	.....	4.35
Palmer	84	32	57.4	1.25
Paxton	.....	.....	.....	1.90
Plattsmouth	.....	.....	.....	4.10
Precept *	89	40	64.3	5.37
Purple Cane *	86	.....	65.7	1.40
Ravenna	87	30	58.6	2.86
Sargent	.....	.....	.....	0.41
Seward*	84	44	61.6	4.08
Superior	95	32	63.1	4.42
Syracuse *	83	41	60.6	4.85
Tecumseh	88	32	61.8	5.21

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Nebraska—Cont'd.	°	°	°	*Ins.*
Tekamah	89	34	61.8	3.02
Wallace *	93	38	61.2	2.65
Weeping Water*	89	33	58.0	3.99
West Hill	84	35	57.8	1.25
West Point	85	45	.....	1.34
Whitman *	92	24	61.9	2.48
Wilcox	.....	39	.....	5.31
York	.....	.....	.....	3.75
Nevada.				
Austin	77	30	50.8	3.81
Battle Mountain*	83	42	61.9	1.93
Belmont	74	30	49.7	2.78
Beowawe *	86	37	58.1	2.05
Browns*	90	50	66.5	0.68
Candelaria	79	32	53.8	2.33
Carlin*	82	40	55.0	1.70
Carson City	78	29	53.9	2.80
Crane's Ranch	.....	.....	.....	1.97
Downeyville	95	34	59.7	2.34
Elko (1)	86	36	56.0	1.63
Ely	80	25	48.4	3.96
Eureka	85	21	52.8	2.48
Fenelon*	96	45	67.2	0.00
Genoa	80	31	53.2	3.63
Golconda *	88	40	61.2	1.65
Halleck *	88	37	54.8	1.75
Hawthorne (1)	82	37	59.2	2.04
Hawthorne (2)	84	36	58.4	1.09
Hot Springs*	83	40	61.0	0.35
Humboldt *	76	40	60.8	1.70
Lewer's Ranch	75	33	53.6	3.04
Mill City	84	40	58.8	.....
Monitor's Ranch	78	22	51.4	1.97
Palisade *	85	40	56.1	1.50
Palmetto	78	24	50.0	2.03
Pioche	84	28	53.2	2.25
Reno*	72	42	55.0	1.70
Reno State Univ'ty	77	30	53.6	2.72
Sodaville	87	38	59.4	2.70
Tecoma*	85	38	59.9	2.50
Toano*	84	36	58.1	0.00
Virginia City	73	31	52.8	3.60
Wadsworth*	84	40	59.1	2.21
Wells *	85	40	59.2	0.25
Winnemucca*	91	42	64.2	2.70
New Hampshire.				
Antrim	.....	.....	.....	1.92
Belmont	.....	.....	.....	2.71
Berlin Falls	80	23	48.2	.....
Berlin Mills *	83	25	49.4	3.87
Concord	88	32	55.2	2.34
East Canterbury	80	38	56.7	3.23
Groveton *	84	32	51.6	3.21
Hanover (1)	79	29	53.0	1.90
Hanover (2)	88	27	52.8	1.97
Lake Village	.....	.....	.....	2.84
Littleton	83	27	49.5	3.36
Manchester (1)	88	32	54.9	2.56
Nashua *	90	32	55.8	2.13
Newton	82	29	53.8	2.54
North Conway	88	29	52.4	1.93
Plymouth	90	28	50.6	2.28
Stratford	87	28	53.6	2.68
Walpole	85	27	52.6	2.31
West Milan	84	24	50.1	2.17
Wier's Bridge	.....	.....	.....	2.66
Wolfborough	.....	.....	.....	2.21
New Jersey.				
Allaire	87	24	58.3	.....
Asbury Park	84	35	58.8	5.70
Belleville†	.....	.....	.....	2.89
Beverly†	91	31	59.3	2.30
Billingsport L. H*	85	38	60.6	2.18
Blairstown	86	29	57.0	2.30
Bridgeton*	88	36	62.3	3.05
Camden	90	36	61.2	2.02
Cape May C. H.†	83	34	59.1	3.54
Deckerton	86	29	56.6	2.74
Dover	91	28	57.2	2.24
Egg Harbor City	90	29	58.1	3.68
Franklinville	86	28	59.6	3.34
Freehold	90	30	58.7	3.82
Gillette	86	33	58.2	3.27
Highland Park†	90	31	58.8	2.91
Hightstown	87	40	62.7	2.41
Imlaystown*	92	32	60.7	2.70
Lambertville *	88	32	58.6	2.91
Locktown	89	30	59.1	2.71
Moorestown *	92	33	59.3	2.33
Mount Holly	88	33	60.6	1.78
Newark (1)	85	35	59.1	2.95
New Brunswick (1)	93	31	61.3	3.20
New Brunswick (2)	87	31	58.6	2.87
Newton	85	33	59.1	2.23
Ocean City*	84	32	58.4	4.60
Oceanic	83	37	61.0	5.39
Paterson	88	31	57.3	3.76
Rancocas	87	36	.....	1.87
Readington	88 h	38 g	62.7 h	.....
Salem	89	36	59.0	2.43
Somerville	90	26	58.0	2.92
South Orange†	87	32	57.8	3.54
Tenafly *	91	30	57.3	2.90
Trenton *	88	42	62.0	3.12
Vineland	88	29	59.8	2.79

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
New Jersey—Con.	°	°	°	*Ins.*
Whiting	92	28	60.2	2.90
Woodbury	92	36	62.0	2.34
New Mexico.				
Albert	89	31	63.2	2.60
Antelope Spring	86	31	58.0	2.24
Bernalillo	.....	.....	.....	2.00
Chama	78	29	51.4	2.93
Deming	96	46	71.9	0.48
Dulce†	82	29	54.6	3.28
Embudo	.....	.....	.....	3.00?
Estalina Springs	79 d	28	54.6	2.15
Fort Bayard	81	35	58.7	1.55
Fort Stanton	82	33	54.7	2.04
Fort Wingate	80	33	55.6	0.95
Gallinas Spring†	83	43	62.8	3.34
Hillsborough †	85	40	62.5	0.97
Lordsburg	92	57	72.1	1.01
Los Lunas	89	36	64.9	5.32
Monero *	78	28	50.6	2.27
Nogal	.....	.....	.....	2.34
Olio	88	35	62.8	0.83
Pojuaque	.....	.....	.....	1.79
Red Cañon†	84	36	59.6	2.52
Springer	.....	.....	.....	2.62
Taos	.....	.....	.....	2.85
New York.				
Adams Centre	.....	.....	.....	0.83
Addison	86	29	54.6	0.32
Afton	.....	.....	.....	1.18
Akron	.....	.....	.....	1.60
Alfred Centre	83	23	52.49	0.60
Apulia	.....	.....	.....	0.60
Arcade (1)	79	22	50.9	1.87
Arkwright	76	28	51.8	.....
Attica	.....	.....	.....	1.81
Avon	.....	.....	.....	1.63
Baldwinsville *	85	31	53.4	0.86
Bedford	.....	.....	.....	2.00
Bethlehem Centre	.....	.....	.....	1.87
Blood's Depot	.....	.....	.....	1.88
Boyd's Corners*	90	38	59.5	1.36
Brentwood	86	31	57.2	3.15
Brockport	.....	.....	51.1	1.05
Brookfield	83	26	51.4	1.96
Canton †	85	28	52.8	1.44
Carmel	86	30	58.2	1.30
Central Park, N. Y.	82	32	57.8	2.45
Chenango Forks	.....	.....	.....	1.03
Cherry Creek	.....	.....	.....	1.91
Cooperstown	82	31	51.9	2.16
Davids Island	83	30	58.2	1.80
De Kalb Junction	.....	.....	.....	1.47
Demster	.....	.....	.....	1.40
Deposit	.....	.....	.....	1.68
Dunkirk (1)	83	31	53.4	.....
Dunkirk (2)	.....	.....	.....	1.14
Fleming	84	27	53.7	0.50
Fort Columbus	84	35	59.4	3.22
Fort Hamilton	82	38	59.2	3.15
Fort Niagara	80	.....	.....	1.00
Fort Porter	78	28	51.4	0.99
Fort Schuyler	83	34	57.4	2.37
Fort Wadsworth	87	32	59.8	4.03
Galway	.....	.....	.....	2.37
Geneva	90	30	54.2	0.50
Greenwich	.....	.....	.....	2.42
Hammondsport*	84	30	56.0	0.07
Honeymead Brook*	83	31	55.4	1.41
Hyndsville	87	28	52.2	2.72
Italy Hill	80	25	51.5	.....
Ithaca	86	31	55.1	0.61
Keene Valley	88	27	45.8	2.82
Kings Station	.....	.....	.....	2.57
Le Roy	85	27	53.3	1.95
Liberty	.....	.....	.....	2.46
Lockport	82	31	50.5	1.35
Lowville	.....	32	50.8	1.34
Lyndonville	.....	.....	.....	1.90
Lyons	84	31	54.0	1.33
Lyon Mountain(2)	.....	.....	.....	1.67
McLean	.....	.....	.....	1.19
Madison Barracks	85	27	52.8	1.03
Malone	80	27	51.8	1.92
Middletown *	87	29	55.4	1.91
Mount Morris	86	26	53.9	1.01
Newark Valley	.....	.....	.....	0.57
New Lisbon*	81	26	48.7	2.50
Ogdensburgh (1)*	80	28	52.5	.....
Oxford †	82	25	54.5	1.39
Palermo †	82	29	53.3	0.44?
Palmyra *	87	38	55.9	1.16
Pawling	.....	.....	.....	2.00
Peekskill †	78	34	58.10	2.88
Perry City	86	28	52.4	0.74
Plattsburgh	85	32	52.9	1.74
Plattsburgh B'ks	86	19	52.5	1.97
Port Jervis	89	30	54.7	2.64
Poughkeepsie	88	30	55.4	1.66
Quaker Street†	84	28	51.5	3.52
Rondout	85	35	57.2	1.68
Saratoga	82	31	55.7	.....
Scottsville	.....	.....	.....	1.60
Setauket	83	35	56.0	1.24
Sherman	80	26	50.4	1.40
Schodack Depot	.....	.....	.....	2.43

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
New York—Cont'd.	°	°	°	*Ins.*
South Canisteo	86	22	51.9	1.41
S. E. Reservoir	.....	.....	.....	1.49
Syracuse	84	33	54.90	0.45
Turin *	79	27	49.8	1.81
Utica	85	30	53.2	1.53
Wappinger's Falls	.....	.....	.....	1.86
Warwick	.....	.....	.....	1.95
Watervleit Arsenal	...	31	.....	2.05
Watkins †	90	21	53.3	.....
West Point	68?	30	48.1	1.90
White Plains	80	38	57.5	1.50
Willets Point	85	35	58.2	2.35
North Carolina.				
Asheville	85	34	61.2	5.09
Bakersville †	83	23	56.0	4.85
Bryson City	.....	.....	.....	1.94
Chapel Hill *	95	34	65.2	8.75
Concord *	90	39	67.5	4.75
Currituck Inlet†	.....	.....	.....	3.33
Douglas	93	30	63.2	8.10
Fayetteville	.....	.....	.....	4.56
Franklin	87	22	60.0	?
Goldsborough	93	38	69.0	4.93
Hendersonville	82	41	61.9	3.58
Highlands	84	36	54.9	3.53
Lenoir *	84	40	62.6	5.10
Lexington †	91	33	64.4	7.88
Lillington †	.....	.....	.....	5.19
Littleton †	91	31	61.8	8.07
Louisburgh	85	33	64.8	6.41
Lumberton	93	39	68.0	3.53
Morganton *†	88	37	63.0	4.59
Mount Airy †	89	28	61.4	6.48
Mount Holly †	.....	.....	.....	5.56
Mount Pleasant	91	32	63.4	7.26
Murphy	.....	.....	.....	1.87
New Berne	84	36	62.4	4.94
Oak Ridge †	88	33	63.2	8.26
Pittsborough	90	34	63.2	7.00
Raleigh	90	36	66.0	9.30
Salisbury	87	42	67.1	6.05
Smithfield	89	36	64.8	7.35
Soapstone Mount *	.....	32	60.3	7.50
Southern Pines	93	37	65.7	11.08
Wadesborough	88	40	65.3	6.47
Wadeville † e	89	38	64.7	4.48
Washington	90	36	66.2	6.14
Weldon †	89	34	64.2	9.34
Willeyton	88	32	63.6	5.20
North Dakota.				
Ellendale	95	30	61.0	2.06
Fort A. Lincoln	.....	20	.....	2.85
Fort Buford	91	14	54.7	1.49
Fort Pembina	93	15	51.4	2.38
Fort Yates	94	23	56.6	1.73
Gallatin * †	92	20	.....	2.21
Grafton	91	25f	51.6f	2.32
Napoleon †	92	18	53.8	2.02
Wahpeton*†	90	21	54.3	1.82
Wild Rice*†	92	29	55.8	0.95e
Ohio.				
Akron	82	30	56.0	2.15
Ashland*	81	35	57.0	1.69
Athens	85	28	58.0	2.25
Bangorville	81	29	55.0	2.17
Bellevue *	84	27	53.5	0.90
Bement *	86	25	52.6	3.58
Canton †	84	28	56.0	2.53
Celina	83	32	59.0	1.46
Circleville (1) †	.....	.....	.....	1.68
Clarksville	84	31	58.0	1.53
Cleveland	82	32	54.9	2.91
Columbus Barracks	85	30	58.4	2.74
Dayton †	84	33	60.0	0.99
Demos	81	31	56.7	3.08
Ellsworth	.....	.....	.....	2.35
Elyria	85	28	56.0	3.69
Findlay	84	28	56.0	1.84
Garrettsville	83	22	51.4	2.56
Georgetown	89	32	61.0	1.47
Granville	82	32	57.0b	2.57
Gratiot *	82	31	57.2	3.27
Greenville *†	80	32	57.0	0.92
Hanging Rock *	88	29	57.0	1.25
Hiram	80	26	54.0	2.33
Hudson	.....	.....	.....	1.85
Jacksonborough	84	32	59.2	1.75
Kenton *†	86	29	56.8	3.02
Leipsic	.....	.....	.....	2.45
Logan	89	29	58.0	3.05
Lordstown	81	23	54.0	2.51
Mansfield †	.....	.....	.....	2.03
Marietta (1)	.....	.....	.....	2.34
Marietta (2)	82	33	60.0	2.29
Marion	.....	.....	.....	1.96
McConnelsville	83	29	60.0	3.76
Montpelier	83	28	56.0	1.91
Napoleon †	85	31	58.8	1.00
New Alexandria	89	29	58.0	4.46
New Comerstown	85	25	56.0	2.92
North Lewisburgh	85	32	58.8	3.50
Oberlin	84	26	54.0	2.55
O. S. University †	83	28	57.0	2.52
Orangeville *	84	23	54.4	1.95
Pomeroy	87	30	64.0	2.65

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Ohio—Cont'd.	°	°	°	*Ins.*
Portsmouth (1)	.....	.....	.....	1.55
Portsmouth (2) †	93	36	60.2	1.55
Sidney	.....	.....	.....	3.07
Springborough †	.....	.....	.....	1.74
Tiffin	82	33	56.3	1.57
Upper Sandusky	82	29	56.0	1.32
Wapakoneta	84	31	57.0	0.95
Wauseon	85	28	56.5	1.49
Waverly	91	29	60.0	1.71
Waynesville	.....	.....	.....	1.62
Westerville	82	31	56.0	2.44
West Milton*	87	34	59.8	2.87
Weymouth	87	23	54.0	2.30
Wheeler	.....	.....	.....	2.03
Wooster †	82	28	55.0	2.24
Youngstown	86	28	57.0	3.06
Oklahoma Ter.				
Buffalo	.....	.....	.....	0.60
Fort Reno	89	39	65.2	3.02
Fort Sill	89	43	66.0	3.65
Guthrie *	88	44	66.6	4.27
Oregon.				
Albany *	87	40	57.4	2.49
Arlington	95	38	65.8	0.44
Ashland (1)	76	44	59.0	1.00
Athena	.....	.....	.....	1.20
Bandon *	66	46	55.8	4.87
Beulah	84	21	55.2	0.60
Cascade Locks	80	42	60.6	1.94
Corvallis	82	32	56.1	1.70
East Portland	85	32	.....	1.27
Eola	79	33	55.2	2.29
Eugene	79	35	56.8	3.00
Forest Grove	88	31	56.4	0.37
Gardiner	72	35	54.5	4.25
Gooseberry	.....	.....	.....	1.34
Grant's Pass	89	31	57.6	2.79
Happy Valley	80	26	54.4	3.14
Hardman	89	30	55.6	1.73
Heppner †	90	30	58.2	1.32
Hood River	88	38	60.7	1.00
Hubbard	80	32	57.0	2.28
Jacksonville	86	32	58.6	2.91
Jordan Valley	.....	.....	.....	2.70
Joseph	80	25	53.1	3.53
La Grande	85	32	58.4	0.57
Lakeview	81	25	54.2	3.69
Lone Rock	83	28	53.5	1.52
McMinnville	84	32	58.6	2.18
Mount Angel	83	34	59.4	2.21
Newburg	.....	.....	.....	2.54
Pendleton	95	30	60.3	0.33
Silver Lake	90	16	56.4	2.05
Siskiyou	85	37	55.4	3.09
Telocaset	.....	.....	.....	0.70
The Dalles	92	38	61.8	0.32
Toledo	82	34	57.2	3.27
Weston	97	32	60.4	1.89
Pennsylvania.				
Allegheny Arsenal	86	32	58.2	3.40
Altoona	86	37	62.2	1.97
Aqueduct *	90	40	60.7	1.65
Blooming Grove*	88	34	56.6	1.90
Blue Knob *	84	26	57.0	0.31
Brookville†	.....	.....	.....	1.59
Browers Lock	.....	.....	.....	2.15
Carlisle	93	33	59.9	2.17
Clarion (1) †	.....	.....	.....	1.35
Coatesville †	89	29	58.0	3.64
Confluence †	.....	.....	.....	3.73
Coopersburgh	86	34	58.5	2.25
Corry	84	24	51.2	1.58
Davis Island Dam†	.....	.....	.....	3.67
Doylestown	.....	.....	.....	3.43
Du Bois †	.....	.....	.....	1.71
Dyberry †	84	20	52.0	2.27
Easton	87	32	58.4	2.78
Edinborough	79	27	53.4	.....
Emporium	83	25	69.6	1.06
F'ks of Neshaminy	.....	.....	58.1	2.66
Frankford Arsenal	89	30	59.8	1.65
Frederick	.....	.....	.....	1.60
Freeport †	.....	.....	.....	1.19
Girardville†	85	31	57.3	1.80
Grampian Hills	78	28	56.1	1.29
Greensborough †	.....	.....	.....	4.86
Greenville	82	25	54.1	3.31
Hamburgh	91	33	59.0	2.24
Hollidaysburgh	92	28	58.3	1.95
Honesdale	82	29	54.9	1.92
Huntingdon	91	30	58.2	1.84
Johnstown†	89	33	58.3	3.34
Kennett Square*	.....	.....	57.6	1.93
Kilmer *	90	40	63.0	2.40
Lancaster	87	32	59.0	2.48
Lansdale†	.....	.....	.....	2.66
Lebanon	90	32	59.2	3.00
Le Roy*	85	26	55.8	1.78
Lewisburgh	91	31	60.4	0.67
Ligonier	87	27	60.0	4.41
Lock Haven†	86	31	58.3	1.85
Lock No. 4 †	.....	.....	.....	4.29
Mahoning †	.....	.....	.....	1.81
Mauch Chunk	90	32	58.6	1.24
McConnellsburgh	93	31	59.3	1.71

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Pennsylvania—Con.	°	°	°	*Ins.*
New Castle	87	24	57.5	2.46
Nisbet *	.....	38	57.8	1.20
Oil City†	.....	.....	.....	1.08
Ottsville	.....	.....	.....	3.01
Parker's Landing†	.....	.....	.....	1.62
Philadelphia(1)	.....	.....	.....	1.86
Philadelphia(2)	91	35	61.7	2.01
Phœnixville	88	31	58.8	2.75
Pleasant Mount	.....	.....	.....	2.45
Point Pleasant	.....	.....	.....	2.94
Pottstown	90	36	60.5	2.28
Quakertown	88	31	56.9	2.56
Reading	.....	.....	.....	2.21
Ridgway†	.....	.....	.....	1.95
Rimersburgh	82	29	56.0	.....
Salem Corners	75	24	58.2	2.16
Saltsburgh†	.....	.....	.....	4.01
Seisholtzville	.....	.....	.....	2.37
Selin's Grove	92	.....	59.7	1.36
Smethport	84	24	53.7	.....
Smith's Corners	.....	.....	.....	2.81
Somerset	88	26	53.4	4.10
South Eaton	85	36	55.2	1.06
State College	85	31	57.0	1.94
Stoyestown†	.....	.....	.....	3.27
Swarthmore	89	30	59.4	2.12
Troy *	85	32	55.2	1.11
Uniontown	83	34	59.8	3.35
Warren†	.....	.....	.....	1.97
Wellsborough *	84	23	50.4	1.30
West Chester	88	32	59.2	3.75
West Newton	.....	.....	.....	4.16
Westtown	88	34	58.7	3.64
Wilkes Barre	90	31	58.7	1.53
Wysox	87	26	55.3	0.49
York	92	32	59.8	2.39
Rhode Island.				
Bristol	75	35	54.1	1.93
Fort Adams	73	27	50.4	1.13
Kingston(1)	81	29	54.3	2.43
Kingston(2)	79	30	53.3	1.76
Lonsdale	.....	.....	.....	2.09
Newport	74	34	55.0	.....
Olneyville	82	36	58.4	.....
Pawtucket	.....	.....	.....	2.16
Providence(1)	84	35	57.4	2.29
Providence(2)	84	30	56.8	2.40
Providence(3)	80	31	56.2	2.40
South Carolina.				
Aiken	90	44	68.4	5.91
Allendale	91	40	70.6	4.02
Batesburgh	94	40	70.2	6.31
Belmont	90	41	67.7	4.48
Blackville	95	40	70.7	2.55
Branchville	92	37	69.0	2.30
Brewer Mine	92	38	68.1	3.91
Cheraw(1)†	92	36	68.0	4.07
Cheraw(2)†	.....	.....	.....	5.32
Chester	92	.....	.....	2.50
Conway	88	39	67.4	2.64
Effingham†	.....	.....	.....	1.71
Evergreen *	90	40	65.2	3.65
Florence	84	40	71.0	3.96
Greenville†	90	37	65.3	4.83
Greenwood	94	40	68.6	3.46
Hardeeville	92	42	70.5	2.49
Jacksonborough	93	39	69.4	5.09
Kingstree	93	39	70.0	3.01
Kirkwood *	.....	44	64.8	2.80
McCormick	.....	.....	.....	3.34
Port Royal*†	87	55	70.8	3.47
Saint Georges	90	40	69.8	3.17
Saint Mathews	91	42	70.2	2.14
Simpsonville *	94 *d*	40*d*	66.0*d*	1.73
Spartanburg(2)	92	40	67.6	7.30
Statesburgh	90	44	68.1	1.85
Trial	91	41	66.9	5.66
Walhalla	83	39	66.5	2.75
Winnsborough	95	44	71.9	3.18
Yorkville	91	40	67.0	4.93
South Dakota.				
Aberdeen	90	21	56.0	1.65
Alexandria†	95	31	56.8	1.33
Brookings	92	30	55.7	0.84
Canton†	90 *f*	34 *f*	57.6 *f*	2.13
Clark	102 *f*	28	57.4	3.35
Cross	86	26	52.6	2.59
De Smet*†	.....	.....	55.8	0.69
Egeland†	90	22	59.8	3.17
Elkton*	84	27	.....	2.11
Flandreau†	93	27	56.5	0.81
Forestburgh†	90	32	57.0	0.38
Fort Bennett	96	26	58.4	1.08
Fort Meade	91	20	56.0	6.60
Fort Randall	92	32	58.8	0.62
Fort Sully	93	30	59.2	2.22
Howard	90	29	61.1	1.87
Kimball *†	94	26	57.3	0.36
Millbank*	95	34	64.7	1.90
Onida *	90	28	54.4	1.56
Oelrichs†	94	24	58.0	1.75
Parkston*	86	34	56.6	1.05
Plankinton†	.....	.....	.....	1.14
Saint Lawrence*	90	32	59.0	1.11
Spearfish *	89	24	56.0	3.15

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
South Dakota—Con.	°	°	°	*Ins.*
Wolsey *	92	33	58.2	0.80
Tennessee.				
Andersonville	89	35	62.5	1.96
Arlington	92	40	65.6	1.48
Ashwood*†	87	40	65.6	0.53
Austin *	88	37	65.4	1.54
Bethel Springs	86	40	66.4	1.98
Bolivar(1)	92	50	69.0	0.80
Bolivar(2)	92	50	72.2	0.89
Brownsville	90	40	67.8	1.57
Carthage†	.....	.....	.....	1.38
Charleston†.	.....	.....	.....	0.84
Clarksville	86	36	65.0	1.81
Clinton†	.....	.....	.....	2.14
Columbia†	.....	.....	.....	0.45
Covington(1)†	88	41	66.3	1.31
Covington(2)	92	42	65.8	1.28
Dunlap	88	36	63.8	1.96
Dyersburgh(2)	96	39	67.7	1.59
Fayetteville†	89	43	65.8	2.37
Florence Station	84	42	65.4	1.10
Franklin	86	41	64.4	0.82
Grand Junction	87	40	66.0	1.37
Greeneville	82	34	60.7	2.76
Harriman†	97	42	65.5	0.96
Hohenwald	89	32	64.4	0.44
Jacksboro	86	34	63.3	3.76
Jackson	86	36	62.3	0.59
Johnson City	89	31	62.7	1.95
Johnsonville†	.....	.....	.....	0.70
Kingston(1)†	.....	.....	.....	1.96
Kingston Springs	85	38	65.0	0.35
Lewisburgh	88	44	65.2	1.32
Loudon†	.....	.....	.....	1.75
Lynnville	83	40	63.7	0.59
McKenzie	86	36	63.4	0.55
McMinnville	85	46	64.5	1.19
Milan	95	38	67.3	0.83
Missionary Ridge	.....	47	64.6	.....
Newport	88	44	64.6	2.64
Northville	84	34	62.2	1.88
Nunnelly	85	44	65.5	1.30
Parksville†	86	34	64.2	1.05
Riddleton	85	36	64.5	1.24
Rockwood†	.....	.....	.....	1.57
Rogersville	85	42	61.9	2.03
Rugby †	85	40	61.5	1.18
Sharp	92	44	66.0	0.58
Sparta	91	48	65.9	1.00
Springdale	90	30	65.0	2.01
Strawberry Plains†	.....	.....	.....	1.57
Trenton	86	39	63.4	1.24
Union City	91	40	68.0	0.95
Waynesborough	85	36	62.4	1.00
Texas.				
Arthur City	.....	.....	.....	1.50
Austin(2)	88	50	72.1	.....
Belton	92	62	78.4	0.10
Berlin	90	47	71.2	2.35
Big Spring	.....	.....	.....	2.70
Brady	88	48	68.9	4.56
Brazoria †*	90	52	71.4	2.08
Brenham †	93	50	74.6	0.65
Brownwood†	89	45	68.4	4.79
Burnet	86	55	70.0	3.65
Camp Eagle Pass	97	55	76.4	3.65
C'p Peña Colorado	94	43	67.8	3.10
Childress	94	42	66.4	4.23
Coldwater	.....	.....	.....	3.10
College Station	92	50	73.8	1.99
Colorado(2)	95	50	70.4	2.65
Colorado (3)	.....	.....	.....	0.12†
Columbia	89	53	73.0	4.62
Corsicana (2)	91	43	70.2	1.20
Cuero	94 *i*	50 *i*	73.8 *i*	1.42
Dallas(2)	92	50	73.2	1.77
Durham	.....	.....	.....	4.53
Duval	92	54	73.5	3.85
Edinburgh	.....	.....	.....	1.41
Epworth	.....	.....	.....	3.10
Forestburgh *	93	40	68.3	1.63
Fort Bliss	94	45	70.6	0.50
Fort Brown	91	59	74.5	0.29
Fort Clark	90	50	72.1	4.00
Fort Davis	88	45	64.8	1.85
Fort Hancock	97	35	66.6	1.26
Fort McIntosh	95	54	76.0	1.57
Fort Ringgold	100	52	77.0	3.16
Fredericksburgh	86	42	68.3	4.48
Gainesville	84 *e*	42	68.4 *d*	3.13
Gallinas†	89	45	72.1	3.02
Graham	94 *i*	48 *i*	72.2 *i*	2.64
Grapevine *	89	45	69.3	1.77
Haskell	92	54	73.5	0.58
Haymond	.....	.....	.....	3.54
Hearne	88	44	71.2	0.50
Houston†	91	45	71.2	1.44
Kent	.....	.....	.....	1.26
Longview†	93	44	71.6	2.82
Luling	92	44	75.0	0.08
Menardville	89	51	67.8	6.77
Merkel	.....	54	64.0	1.02
Mesquite	93	46	71.4	0.91
Midland	.....	.....	.....	2.52
Monahans	.....	.....	.....	3.00

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Texas—Cont'd.	°	°	°	*Ins.*
Mountain Springs	88	47	68.5	2.16
New Braunfels	86 *e*	45 *e*	70.4 *e*	2.11
New Ulm	92	51	73.0	0.66
Orange	86	44	69.8	0.22
Panhandle	86 *f*	.....	54.2 *g*	0.82
Painted Cave†	.....	.....	.....	2.18
Paris	93	44	71.0	2.55
Quanah †	.....	.....	.....	2.95
Roby †	93	47	68.6	4.89
Round Rock	90	44	71.2	4.34
San Angelo	96	52	69.8 *f*	4.12
San Antonio	88	47	71.8	2.36
Sanderson	.....	.....	.....	3.29
Santa Maria	.....	.....	.....	3.34
Sierra Blanca(1)	100	43	69.0	.....
Sierra Blanca(2)	.....	.....	.....	1.68
Silver Falls	92 *d*	45	66.0 *d*	1.47
Temple	92	50	72.0	1.71
Van Horn	.....	.....	.....	1.00
Venus	90	47	70.4	1.26
Waco(2)†	92	51	73.5	2.45
Weatherford†	91?	30?	64.0?	2.07
Wichita Falls *	92	42	67.8	2.69
Utah.				
Beaver†	86	29	56.1	0.61
Blue Creek *	87	48	66.5	0.40
Corinne	87	40	64.6	1.30
Fort Douglas	86	38	60.0	0.72
Fort DuChesne	86	.....	.....	0.96
Grouse Creek	.....	.....	.....	1.73
Kelton*	87	40	62.7	1.77
Levan	.....	.....	56.8	1.10
Logan	84	32	58.8	2.48
Loseet	81	30	54.8	1.10
Moab†	101	42	67.7	0.39
Mount Carmel*†	80 *f*	33	55.0	2.31
Mount Pleasant	68	29	45.1	2.33
Nephi †	87	26	56.8	1.18
Ogden (1)	85	38	62.8	2.56
Ogden (2)*†	.....	.....	64.1	3.08
Parowan *	86	33	56.7	1.14
Promontory	90	35	59.9	1.70
Provo City	.....	.....	60.8	.....
Snowville	90	46	66.2	1.94
Stockton	.....	.....	53.4	.....
Terrace *	88	50	62.0	1.20
Vermont.				
Brattleborough(1)	90	27	57.0	2.71
Brattleborough(2)	87	29	55.2	.....
Burlington	82	29	56.8	2.16
Chelsea *	76	26	48.3	2.91
East Berkshire†	83	23	50.6	2.89
Hartland	.....	.....	.....	2.24
Jacksonville	85	24	52.2	2.67
Lunenburgh *	80	35	54.3	3.47
Strafford *	78	30	53.8	3.10
Vernon	80	30	55.3	1.75
Weathersfield C'tre	83	27	52.2	.....
Virginia.				
Abingdon	.....	.....	.....	4.21
Big Stone Gap†	88	30	58.7	4.08
Birdsnest *	88	42	63.0	4.75
Casanova	92	39	63.2	2.97
Christiansburgh†	75	28	50.7	4.31
Clarksville †	.....	.....	.....	6.80
Dale Enterprise†	88	32	62.7	4.07
Danville	.....	.....	.....	5.49
Fort Monroe	85	42	62.4	4.50
Fort Myer	89	35	61.6	3.99
Lexington †	90	27	60.6	4.29
Marion	85	27	59.2	3.72
Mossing Ford *	87	33	61.0	7.07
Nottaway C. H.	96	29	63.2	7.74
Petersburgh †	92	33	63.7	5.74
Richmond †	95	33	64.8	4.45
Salem	86	39	62.6	4.99
Stanardsville	90	44	65.6	3.87
Staunton	91	33	59.2	5.04
Summit	84	28	58.0	.....
Woodstock†	.....	.....	.....	2.55
Washington.				
Aberdeen	85	36	57.3	2.75
Chehalis	89	33	57.4	1.41
Doe Bay†	73	38	52.6	0.99
East Sound	79	39	54.4	1.39
Fort Canby	72	42	53.3	2.56
Fort Simcoe	92	50	67.4	0.44
Fort Spokane	94	33	62.0	1.71
Fort Townsend	75	36	54.4	0.30
Fort Walla Walla	94	38	63.5	0.90
Lapush	68?	12?	38.8?	1.45
Port Blakeley†	80	38	56.6	1.32
Seattle	82	37	57.4	1.42
Tacoma	84	38	58.6	1.92
Vancouver B'ks	86	37	58.9	1.70
Waterville	91	29	57.1	1.73
West Virginia.				
Alderson *	82	30	55.8	.....
Buckhannon†	.....	.....	.....	4.10
Charleston†	.....	.....	.....	4.45
Ella*	80	35	57.2	3.17
Glenville†	.....	.....	.....	2.01
Harper's Ferry †	.....	.....	.....	2.38

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
W. Virginia—Cont'd	°	°	°	*Ins.*
Hinton†	.....	.....	.....	5.01
Kingwood	85	34	59.9	.....
Morgantown †	.....	.....	.....	3.20
Pleasant Hill *	82	30	57.8	3.00
Point Pleasant †	.....	.....	.....	1.96
Rowlesburgh†(1)	.....	.....	.....	4.25
Tannery *	85	34	57.5	.....
Tyler Creek	78	31	56.4	1.88
Weston	.....	.....	.....	4.68
Wheeling (1) †	.....	.....	.....	3.13
Wheeling (2)	87	38	63.2	.....
White Sulp'r Sp'gs	.....	.....	.....	3.00
Wisconsin.				
Amherst	84	20	56.4	0.52
Appleton(1)	82	25	56.9	0.01
Bayfield	88	25	53.2	1.34
Beaver Dam	85	28	55.1	0.64
Beloit	80	29	56.0	4.16
Black River Falls	86	24	53.8	0.17
Butternut*†	.....	.....	54.1	0.70
Cadiz *	.....	.....	54.7	1.11
Centralia	83	.....	56.7	0.37
Chippewa Falls	.....	.....	.....	1.59
Columbus	84	25	54.7	0.86
Crandon	85 *j*	23 *h*	54.0 *j*	0.36
Delevan	82	30	57.7	2.55
De Pere	87	29	57.3	0.20
Eau Claire	84	25	56.8	2.00
Elroy	82	28	56.4	0.67
Ellsworth	83	26	57.4	1.48
Embarrass*	86	34	59.0	0.25
Fond du Lac	82	26	55.4	0.44
Glasgow	88 *g*	35 *h*	59.6 *h*	0.52
Harvey †	82	26	55.4	1.58
Hayward	84	15	53.8	2.15
Hillsborough	82	25	53.5	0.70
Honey Creek*	80	32	55.8	1.83
Ithaca	.....	30	54.6	1.34
Janesville	80	26	55.2	0.21
Kenosha	84	30	51.4	1.52
Koepenick	.....	.....	.....	0.20
Lancaster	82	30	57.3	1.50
Lincoln *	.....	.....	54.8	0.83
Madison	78	32	56.0	1.42
Manitowoc	80	23	54.6	0.29
Mauston	80	18	49.5	.....
Meadow Valley†	85	26	56.6	0.25
Medford(1)†	.....	.....	.....	0.70
Medford(2)	83	19	52.3	0.46
Menomonie	85	21	56.7	2.14
Neillsville *	.....	.....	.....	0.37
New Holstein †	84	25	53.4	0.74
Oconomowoc †	80	26	54.8	1.21
Oconto	84	25	54.2	0.21
Osceola Mills†	87	17	53.1	1.95
Oshkosh†	80	27	55.4	0.48
Pepin	82	27	53.9	1.69
Peshtigo	82	24	52.1	0.20
Phillips †	.....	.....	.....	1.05
Plover	85	20	52.7	0.64
Portage(1)†	.....	.....	.....	0.56
Portage(2)	80	30	58.4	0.56
Prairie du Chien	87	32	60.0	1.65
Rhinelander	83	23	52.5	0.22
Shawano	85	23	52.6	0.11
Shell Lake	82	24	57.1	1.63
Viroqua†	85	36	58.9	0.64
Watertown	80	.....	.....	1.83
Wausau	84	20 *d*	53.7	T.
Westfield†	90	22	55.8	0.42
Weston	.....	36	55.8	1.87
Whitehall †	86	23	55.2	0.45
Wyoming.				
Camp Pilot Butte	88	31	53.9	3.35
Fort D. A. Russell	86	21	49.0	4.90
Fort Fetterman	97	26	52.7	T.
Fort McKinney	87	28	54.8	1.60
Fort Washakie	83	28	52.8	4.93
Fort Yellowstone	78	22	59.8	2.12
Laramie	76	28	49.2	2.92
Lusk	83	24	53.2	0.90
Saratoga	81	34	52.1	1.98
Wheatland	80	33	56.1	0.30
British Columbia.				
Esquimalt	69	36	52.5	0.79
Mexico.				
La Logia*	98	55	77.2	T.
Leon de Aldemas	93	50	71.1	0.82
Mazatlan	84	66	79.1	T.
Mexico	82	47	63.2	3.24
Topolobampo*	86	71	77.0	0.00
New Brunswick.				
Saint John	63	36	47.5	2.61
Newfoundland.				
Saint Johns	70	30	43.1	5.59
Sandwich Islands.				
Honolulu	84	63	74.0	0.68
Dutch Guiana.				
Burnside-Coronie	90	73	78.9	9.04
West Indies.				
Grand Turk Island†	.....	.....	.....	4.00
Hamilton, Bermuda	75	60	69.5	6.91

Received too late for general discussion of weather for May, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Arizona.				
Antelope Valley	.....	.....	.....	0.00
Colorado.				
Fort Collins	85	31	54.8	4.07
Georgia.				
Thomasville (2)	93	47	72.6	1.72
Idaho.				
American Falls	86	23	54.4	1.40
Iowa.				
Fayette	83	25	55.1	1.99
Michigan.				
Berlin	.....	.....	.....	2.20
Mississippi.				
Pontotoc	88	41	61.8	1.03
Montana.				
Custer	.....	.....	.....	1.45
Nebraska.				
Alliance	88	27	52.6	3.78
New York.				
Binghamton	85	29	54.1	1.16
Constableville	78	27	49.1	1.63
Elmyra	.....	.....	57.1	0.50
Factoryville	88	24	54.8	0.59
Hess Road Station	83	31	52.4	1.45
Humphrey	83	24	53.2	1.45
Jamestown	.....	.....	53.8	.....
New York—Cont'd.				
Lyon Mountain (1)	73	23	47.4	.....
Marshland	80	25	52.0	.....
Middleburgh	90	30	54.8	3.00
Minnewaska	82	26	52.8	2.68
North Hammond	.....	.....	53.7	1.04
Number Four	78	24	49.8	1.57
Ogdensburgh (2)	82	27	54.3	.....
Potsdam	82	28	53.0	0.79
South Kortright	82	21	51.2	3.57
Wedgwood	87	25	52.9	0.89
North Dakota.				
Davenport	91	17	58.4	0.89
Kelso	92	19	53.8	1.45
Steele	93	16	52.6	3.39
South Carolina.				
Waterer †	.....	.....	.....	5.00
Texas.				
Corsicana (1)	.....	48	69.9	1.89
Hartley	94	38	64.4	1.38
Huntsville	88	44	72.0	1.69
La Grange	.....	58	72.2	0.74
Panter	94	55	69.2	1.38
Snyder	.....	50	67.4	6.00
Dutch Guiana.				
Burnside-Coronie	87	72	78.9	9.38

Received too late for publication in April, 1891.

Alabama.				
Sturdevant	.....	.....	.....	1.55
Arizona.				
San Simon	89	49	61.7	0.00
California.				
Anderson	87	42	61.4	4.27
Ballast Point L. H.	.....	.....	.....	1.10
C. Mendocino L. H.	.....	.....	.....	8.92
Crescent City L. H.	.....	.....	.....	9.07
East Brother L. H.	.....	.....	.....	1.58
Farrallon L. H.	.....	.....	.....	2.60
Humboldt L. H.	.....	.....	.....	5.94
Lime Point L. H.	.....	.....	.....	2.34
Mare Island L. H.	.....	.....	.....	2.79
Ogilby	108	55	78.4	0.00
Piedras Blancas L H	.....	.....	.....	1.45
Pigeon Point L. H.	.....	.....	.....	2.23
P't Año Nuevo L. H.	.....	.....	.....	2.20
Point Arena L. H.	.....	.....	.....	4.73
Point Bonita L. H.	.....	.....	.....	3.00
P't Conception L. H.	.....	.....	.....	0.46
Point Fermin L. H.	.....	.....	.....	0.50
P't Hueneme L. H.	.....	.....	.....	0.94
P't Montara L. H.	.....	.....	.....	1.90
Point Pinos L. H.	.....	.....	.....	2.81
Point Reyes L. H.	.....	.....	.....	2.93
Point Sur L. H.	.....	.....	.....	2.50
Roe Island L. H.	.....	.....	.....	1.74
San Luis L. H.	.....	.....	.....	1.50
Santa Barbara L. H.	.....	.....	.....	1.66
Santa Cruz L. H.	.....	.....	.....	2.24
California—Cont'd.				
Trinidad L. H.	.....	.....	.....	8.03
Yerba Buena L. H.	.....	.....	.....	2.51
Colorado.				
Wray	.....	.....	.....	4.68
Georgia.				
Diamond	.....	28	57.7	5.25
Indiana.				
Logansport (1)	.....	.....	.....	3.20
Mount Vernon (1)	.....	.....	.....	1.54
Iowa.				
McCausland	78	22	50.0	3.27
Kentucky.				
Burksville	.....	.....	.....	1.58
Paducah	.....	.....	.....	1.91
Maryland.				
Jewell	.....	34	57.2	2.00
Montana.				
Custer	.....	.....	.....	1.21
Powder River	87	13	47.7	0.98
North Carolina.				
Highlands g	78	37	54.9	1.82
North Dakota.				
Ellendale	88	19	51.4	2.94
Steele	92	5	46.8	1.38?
Texas.				
Colorado (1)	.....	.....	.....	1.26
Utah.				
Mount Pleasant	60	12	30.0	0.00
Virginia.				
Bedford City	.....	31	55.2	2.84

Letters of the alphabet denote the number of days missing from the record, thus: the letter *e* indicates three days missing, etc., etc.

*Extremes of temperature from observed readings. †Signal Service instruments. ‡One observation daily at 10 a. m.

Corrections: Mammoth Tank, Cal., April, 1891, make rainfall 0.02 instead of 0.00; Pleasanton, Cal., April, 1891, make rainfall 0.00 instead of blank.

Precipitation (inches and hundredths) observed at Asheville, N. C., by W. W. McDowell, E. J. Aston, Dr. W. Zleitzman, B. H. Douglass, and Dr. Karl von Ruck, voluntary observers.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1857	.....	.....	.....	.....	.....	.....	6.00	3.80	1.25	.....	.....	3.83	.....
1858	1.80	2.40	1.10	2.44	2.30	4.60	.....	.....	.....	.....	.....	.....	.....
1869	1.80	3.70	3.70	3.60	3.85	6.40	1.50	2.20	1.50	1.80	2.30	5.60	37.95
1870	3.50	2.30	4.55	2.80	6.70	4.70	6.40	5.60	2.50	2.00	1.80	2.50	45.35
1871	1.13	0.59	5.30	3.50	3.60	4.10	3.20	7.40	2.40	[2.50]	2.20	1.80	37.72
1872	2.00	1.60	1.70	2.20	2.00	3.70	4.20	5.60	2.20	2.70	1.60	4.60	34.10
1873	4.30	9.60	3.30	1.80	5.30	2.00	4.40	4.50	2.10	0.90	4.50	2.50	45.20
1874	[3.00]	3.60	2.70	5.60	2.70	3.15	11.40	3.40	2.80	1.10	3.60	1.70	44.75
1875	6.25	6.20	9.40	4.30	1.40	1.90	5.10	6.81	2.30	1.19	2.74	5.27	52.86
1876	2.80	[4.50]	6.12	2.55	5.71	7.77	6.29	3.91	2.13	2.19	1.91	1.84	47.73
1877	[5.00]	0.63	6.38	6.87	1.48	5.57	5.20	2.30	1.50	5.75	5.44	2.70	48.82
1878	3.40	4.58	2.38	4.30	.....	.....	4.93	4.00	3.81	.....	.....	.....	.....
1879	3.49	1.25	.....	.....	2.31	.....	.....	5.10	0.70	.....	.....	5.55	.....
1880	1.52	1.38	6.60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1884	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.10	2.90	.....
1885	4.20	.....	.....	12.10	3.90	.....	.....	.....	.....	5.10	4.80	.....	.....
1887	.....	2.71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	0.94	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889	2.59	1.68	0.43	1.45	5.47	4.77	5.39	5.81	4.28	0.49	4.72	0.97	38.05
1890	1.42	5.30	2.50	3.93	4.44	1.13	5.86	6.71	3.86	3.77	0.29	2.44	41.65
Mean..	2.89	3.25	4.01	4.10	3.65	4.15	5.38	4.80	2.38	2.46	2.85	3.16	43.08

Interpolated values are given in brackets.

Mean temperature (degrees Fahr.) observed at Austin, Tenn., by Dr. S. K. Jennings and P. B. Calhoun, voluntary observers.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1861	37.7	44.4	47.2	56.9	63.7	.....	.....	.....	.....	.....	.....	.....	.....
1868	33.6	41.6	57.3	58.5	66.8	75.5	83.6	76.6	68.3	58.0	44.8	38.0	58.6
1869	.....	.....	.....	.....	.....	.....	78.0	80.5	68.4	50.1	43.4	38.9	.....
1870	40.9	41.4	44.0	57.4	68.2	72.6	78.2	76.6	71.4	60.2	[48.0]	[46.0]	[58.7]
1871	40.0	45.9	54.3	60.4	67.4	75.5	75.0	76.4	69.0	60.2	45.8	39.6	59.1
1872	33.4	40.7	42.8	60.0	68.2	77.0	79.7	[80.0]	77.2	56.9	40.2	31.7	[57.3]
1873	34.5	40.9	41.0	58.8	69.2	77.7	79.6	77.0	73.1	[56.0]	46.8	43.7	[58.2]
1874	.....	.....	.....	53.9	70.0	85.5	84.2	81.7	72.9	59.4	48.9	40.8	.....
1875	32.2	39.1	49.1	55.4	64.8	75.9	81.2	81.2	67.6	62.8	49.3	47.1	58.8
1876	46.3	45.0	40.8	58.8	76.9	[76.0]	79.1	77.6	[60.0]	55.9	44.2	25.0	[57.1]
1877	28.8	46.1	[47.0]	58.4	64.5	78.1	83.5	[77.0]	70.6	60.2	47.8	47.6	[59.1]
1878	37.8	42.4	54.9	65.3	69.4	72.1	83.5	80.7	[71.0]	57.1	49.9	31.4	[59.6]
1879	33.6	41.3	[50.0]	58.1	75.6	74.4	85.2	76.1	[70.0]	70.2	54.5	49.4	[61.5]
1880	53.1	45.5	50.9	62.7	72.6	77.0	77.9	79.4	68.4	59.8	[41.0]	[36.0]	[60.4]
1881	34.2	41.9	45.1	55.9	72.3	77.7	83.1	84.6	78.2	67.2	50.1	46.3	61.4
1882	43.3	51.1	53.0	62.8	65.9	75.6	74.0	79.2	70.9	66.8	47.6	37.5	60.6
1883	28.6	44.0	44.4	57.2	66.0	71.7	77.2	76.2	70.8	59.8	49.7	44.8	57.5
1884	28.2	47.0	49.0	55.7	68.6	[73.0]	77.6	78.8	75.8	65.7	46.1	41.5	[58.9]
1885	34.9	32.9	43.7	60.2	65.3	73.9	71.6	[77.0]	[70.0]	55.9	49.4	40.0	[56.2]
1886	30.8	35.0	[47.0]	59.3	70.0	74.5	77.9	77.4	77.3	59.2	47.1	35.2	[57.6]
1887	38.8	50.6	49.2	59.1	79.2	77.1	77.7	81.7	77.4	54.0	47.1	38.5	60.9
1888	37.8	42.3	47.4	62.4	68.0	79.3	80.9	79.4	68.4	52.5	54.1	40.4	59.4
1889	40.4	39.1	50.2	60.8	66.6	73.4	79.3	75.8	69.7	56.7	49.6	56.5	59.8
1890	50.2	51.4	45.4	61.8	66.6	80.6	78.1	76.0	71.8	58.2	52.9	41.8	61.2
Mean..	37.2	43.2	47.9	59.1	68.9	76.1	79.4	78.6	71.2	59.2	47.8	40.8	[59.1]

Precipitation (inches and hundredths) observed at Austin, Tenn., by Dr. S. K. Jennings and P. B. Calhoun, voluntary observers.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1861	5.62	3.02	1.93	6.60	4.89	.....	.....	.....	.....	.....	.....	.....	.....
1868	4.31	0.75	3.23	9.80	2.85	1.20	1.82	4.00	10.20	2.02	3.87	7.23	51.28
1869	.....	.....	.....	.....	.....	.....	1.95	3.67	4.75	4.60	5.16	3.94	.....
1870	8.00	5.15	5.27	3.37	2.79	8.90	7.08	3.80	3.52	3.64	[3.00]	[2.00]	[56.52
1871	4.80	0.72	7.37	3.86	4.10	6.69	3.50	7.80	3.15	2.05	2.20	3.59	55.83
1872	2.75	3.94	4.10	5.05	2.08	6.92	7.82	[4.55]	3.21	2.99	3.82	4.51	[51.74
1873	4.65	8.99	4.56	2.95	6.02	5.35	5.39	2.03	2.51	[4.00]	2.79	5.72	[54.96
1874	.....	.....	.....	11.98	1.56	0.66	2.24	4.19	4.11	1.31	7.24	7.25	.....
1875	7.03	3.54	12.59	3.65	2.77	7.89	4.58	5.14	3.88	3.24	6.68	6.20	66.19
1876	5.80	2.92	6.08	1.79	3.77	[5.50]	2.27	1.52	[2.50]	2.50	1.94	1.86	[38.45
1877	3.80	5.76	[5.00]	10.70	1.44	8.68	3.30	[4.00]	4.50	1.27	5.02	1.82	[55.29
1878	2.72	4.19	3.83	5.52	2.35	8.92	2.44	1.17	[3.52]	1.18	2.06	8.33	[46.23
1879	6.70	1.85	[4.00]	2.25	2.24	1.88	3.15	1.96	[5.00]	1.72	5.28	10.20	[46.23
1880	4.82	10.39	10.38	5.92	1.55	4.87	10.13	4.55	2.52	5.14	[5.70]	[3.80]	[69.77
1881	3.98	3.71	3.10	4.35	1.91	7.00	0.20	0.50	5.80	4.62	5.16	5.84	46.17
1882	18.11	7.95	8.90	4.81	8.40	2.40	9.40	7.45	1.85	0.95	2.30	0.85	73.37
1883	4.57	7.50	4.35	8.60	3.91	6.62	3.35	3.55	1.65	5.11	3.45	3.60	56.26
1884	5.95	8.92	8.25	2.10	3.47	4.26	4.08	2.29	1.51	2.71	1.77	3.34	48.65
1885	5.87	2.36	1.97	2.55	4.76	2.93	4.50	0.97	3.35	3.21	2.73	2.89	38.09
1886	2.66	5.00	4.86	2.97	2.54	7.37	4.73	6.08	3.75	0.38	6.36	2.11	48.81
1887	3.72	12.57	4.54	2.01	3.32	1.29	2.33	1.85	2.62	2.07	1.70	3.78	41.50
1888	2.85	2.34	5.27	3.02	2.86	4.16	1.99	6.85	4.97	3.67	3.03	1.57	42.58
1889	4.62	3.71	2.98	3.17	3.65	5.58	5.76	3.01	3.59	1.31	7.13	1.22	45.73
1890	8.65	9.13	9.56	4.39	5.97	4.68	0.26	4.70	6.69	4.94	1.57	3.03	63.57
Mean..	5.54	5.47	5.55	4.84	3.44	5.12	4.01	3.72	3.88	2.77	3.91	4.12	52.37

Mean temperature (degrees Fahr.) observed at Asheville, N. C., by W. W. McDowell, F. J. Kron, E. J. Aston, Dr. W. Zleitzman, Dr. B. H. Douglass, and Dr. Karl von Ruck, voluntary observers.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1857	.....	.....	.....	.....	.....	.....	.....	70.0	64.4	.....	.....	41.8	.....
1858	39.1	33.7	42.9	52.2	61.1	69.8	.....	.....	.....	.....	.....	.....	.....
1867	.....	.....	.....	.....	61.7	69.0	72.4	69.8	67.7	53.6	47.6	40.7	.....
1868	33.2	36.3	48.7	52.9	60.7	68.2	73.4	70.6	66.0	55.1	42.2	33.2	53.4
1869	42.1	39.9	43.6	53.4	59.4	67.4	71.2	71.8	62.5	48.6	40.5	37.2	53.1
1870	41.3	38.6	41.7	53.7	62.2	67.8	73.2	71.8	64.0	54.8	44.4	33.8	53.9
1871	38.9	43.8	50.8	58.0	62.1	70.8	70.6	72.4	61.4	.....	46.0	37.4	.....
1872	33.8	38.2	39.4	56.9	64.2	68.4	73.0	71.1	63.7	53.5	40.3	35.0	53.1
1873	35.0	40.5	42.4	53.5	62.7	68.8	71.5	70.8	64.6	50.5	41.7	36.9	53.2
1874	39.7	40.8	52.1	51.2	65.0	71.2	72.8	69.9	66.4	53.5	45.0	41.0	55.7
1875	36.5	34.3	39.8	48.0	62.0	67.3	71.8	68.8	60.8	49.0	48.3	43.2	52.5
1876	42.7	40.5	44.4	58.1	72.3	76.8	72.9	71.9	64.0	52.3	43.1	29.8	55.7
1877	40.1	42.3	44.4	59.8	60.0	69.5	72.7	70.0	64.2	55.2	45.1	42.0	55.4
1878	34.0	39.4	50.9	50.9	.....	.....	74.7	72.5	64.7	.....	.....	.....	.....
1879	35.9	36.1	48.7	.....	64.0	.....	.....	67.6	61.3	59.9	.....	44.8	.....
1880	40.4	42.6	47.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1884	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46.0	41.0	.....
1885	36.0	.....	.....	51.0	60.0	.....	.....	.....	.....	83.0	44.0	.....	.....
1887	.....	49.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1888	39.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1889	38.8	36.3	45.4	56.4	62.6	67.2	72.9	68.8	63.9	52.3	45.3	51.2	55.1
1890	47.2	49.0	42.6	56.8	62.4	71.7	70.8	67.9	65.6	53.0	51.4	39.2	56.5
Mean..	38.9	40.1	45.3	54.2	62.6	69.6	72.4	70.4	64.1	55.3	44.7	39.3	54.3

Interpolated values are given in brackets.

Mean temperature (degrees Fahr.) observed at Punta Rasa, Fla.

Station established August 15, 1871; closed June 15, 1883.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1871 ...	.....	.....	.....	.....	.....	.....	.....	.....	80.2	77.2	71.6	65.7	.....
1872 ...	61.5	62.8	68.0	76.3	78.0	81.0	80.3	81.3	79.8	73.7	67.8	62.7	72.8
1873 ...	61.6	66.0	64.7	72.6	79.3	81.0	81.1	80.2	80.0	72.0	66.2	65.2	72.5
1874 ...	62.9	68.7	71.3	73.7	75.9	79.4	80.7	81.2	78.8	74.2	70.1	65.5	73.5
1875 ...	69.6	65.9	70.6	70.0	76.5	79.1	80.9	79.5	80.8	74.5	73.3	66.6	73.9
1876 ...	67.1	68.7	67.9	72.5	75.6	80.4	80.4	81.4	80.8	74.5	66.6	59.9	73.0
1877 ...	65.5	64.4	66.7	70.9	75.5	81.7	82.6	82.1	81.9	77.3	69.6	64.1	73.5
1878 ...	60.0	63.5	69.8	74.6	78.4	81.5	82.5	83.0	80.1	75.2	69.1	61.5	73.3
1879 ...	61.7	63.3	69.4	70.8	75.7	79.1	81.1	80.9	78.8	76.8	69.2	70.2	73.1
1880 ...	67.9	68.2	72.5	73.4	75.8	80.2	81.8	80.3	80.0	74.9	72.9	62.7	74.2
1881 ...	64.5	65.2	64.9	69.5	76.3	81.7	82.9	80.6	79.9	77.2	72.1	67.7	73.5
1882 ...	67.9	67.9	70.8	73.4	76.7	80.5	80.4	80.8	79.6	76.3	67.1	62.6	73.8
1883 ...	66.2	70.7	67.1	73.1	75.3	.....	.....	.....	.....	.....	.....	.....	.....
Mean..	64.7	66.3	68.6	72.9	76.6	80.5	81.3	81.0	80.1	75.3	69.6	64.5	73.4

Precipitation (inches and hundredths) observed at Punta Rasa, Fla.

1871 ...	.....	.....	.....	.....	.....	.....	.....	.....	15.49	1.80	0.98	2.68	.....
1872 ...	2.64	2.71	0.69	1.54	2.88	7.16	8.68	4.08	5.14	2.82	0.53	1.87	40.74
1873 ...	6.84	0.48	1.59	3.58	9.89	5.21	5.13	9.85	9.13	3.90	2.83	1.57	60.00
1874 ...	2.05	2.50	0.06	0.41	1.27	11.94	8.06	5.11	4.73	0.09	1.21	0.71	38.16
1875 ...	0.84	0.03	0.70	4.59	2.07	3.33	5.33	12.49	6.99	2.08	1.00	1.26	40.71
1876 ...	0.04	0.51	1.35	0.88	2.73	4.34	16.95	5.19	4.07	5.25	2.56	0.47	44.34
1877 ...	1.53	2.89	0.84	1.09	4.38	1.26	6.59	8.33	4.86	1.99	4.30	0.93	38.99
1878 ...	4.03	7.41	2.24	4.95	5.06	4.75	9.58	3.95	8.77	0.56	0.34	1.07	51.81
1879 ...	0.31	2.11	0.14	0.63	1.42	3.22	6.21	12.75	13.78	4.85	0.35	0.52	46.29
1880 ...	3.22	1.26	0.03	0.55	5.32	2.45	3.76	8.55	2.50	8.10	1.81	1.98	39.53
1881 ...	4.03	0.52	1.18	0.54	3.13	2.53	3.60	7.28	7.20	1.58	0.80	1.22	33.60
1882 ...	0.30	0.20	0.15	3.59	2.51	8.46	5.58	3.62	4.12	3.90	1.04	1.10	34.57
1883 ...	1.29	0.01	6.64	2.70	2.62	.....	.....	.....	.....	.....	.....	.....	.....
Mean..	2.26	1.72	1.30	2.01	3.61	4.97	7.22	7.58	7.23	3.08	1.48	1.28	43.54

Precipitation (inches and hundredths) observed at Attaway Hill, N. C., by F. J. Kron, voluntary observer.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1861 ...	.....	.....	.....	5.56	4.12	3.67	7.33	2.16	3.63	2.61	.....	.....	.....
1867 ...	3.34	2.83	8.89	3.72	9.73	9.04	1.43	8.70	4.80	8.58	1.92	5.40	68.38
1868 ...	6.80	3.95	4.70	6.69	5.39	2.26	9.70	6.44	7.29	5.54	1.00	4.44	64.20
1869 ...	6.03	4.75	4.75	3.92	3.51	4.78	0.68	5.95	2.50	2.75	4.00	7.06	50.68
1870 ...	4.50	3.66	7.05	4.02	6.72	3.17	3.91	2.13	1.14	2.80	1.97	2.91	43.98
1871 ...	2.16	5.09	5.61	3.50	6.93	3.10	3.05	2.38	4.50	3.83	4.72	1.02	45.89
1872 ...	1.90	6.45	5.83	2.53	2.63	5.49	1.09	4.03	3.41	1.28	2.06	3.19	39.89
1873 ...	3.74	8.34	2.25	2.06	7.33	2.97	3.65	8.18	5.44	3.24	5.30	1.96	54.46
1874 ...	5.05	4.71	2.63	9.37	2.63	5.34	4.04	5.75	10.19	3.35	2.54	3.48	59.08
1875 ...	3.49	4.95	7.73	6.27	2.79	5.03	6.13	7.33	2.42	2.42	4.55	5.39	58.52
1876 ...	1.12	3.60	5.40	2.15	2.90	7.54	2.25	2.92	6.62	0.50	2.15	3.32	39.47
1877 ...	2.58	1.20	4.61	4.44	1.08	3.60	7.18	.....	.....	.....	.....	.....	.....
Mean..	3.70	4.50	5.41	4.52	4.65	4.67	4.20	5.09	4.90	3.35	3.02	3.72	51.73

TEMPERATURE OBSERVED AT NEW BEDFORD, MASS., BY SAMUEL RODMAN AND THOMAS R. RODMAN.

To the Chief Signal Officer, U. S. A.,
Washington, D. C.

Sir: My father, the late Samuel Rodman, began the record of temperature, an abstract of which is sent herewith, in October, 1812, at New Bedford, at the house on the northwest corner of Water and William streets. The position of the thermometer was at the east window of the second story and its elevation was about thirty feet above tide water.

On January 24, 1820, the location of the observations was changed to the house on the northwest corner of Water and Middle streets. The position of the thermometer was at the northeast angle of the L of the house, and its elevation was about 15 feet above tide water.

On January 19, 1828, the location of observations was again changed to the house on the southeast corner of Spring and County streets, where it has been continuously maintained to the present time.

The first thermometer in this location, as I remember it, not very long after the date last mentioned, was on the pillars of the north portico of the house, where, by an arrangement of chains and hooks, it could be moved from side to side so as to escape the sun's rays. Its elevation in this position was about 108 feet above tide water.

At a subsequent date, which I cannot now determine, the thermometer was removed to its present position in front of, and about 18 inches from, the north window of the northwest room of the first story of the house. It is inclosed in a cage whose sides are of wood and whose front and back are of wire netting. The cage is suspended from an iron framework and is firmly held in its place by iron braces. The elevation of the thermometer is about 106 feet above tide water. On each side of the window the blinds are bowed at right angles and permanently secured in this position so as to shield the instruments from the sun, and insulation is thus practically perfect.

The thermometer now in use is of the manufacture of J. Green & Sons, and its number is 2,789. It was carefully selected by my father at a date which I am unable to establish. I am also unable to give the description and dates of adoption of other thermometers prior to the selection of that now in use, but I am satisfied, from my own recollection and from my knowledge of my father's conscientious care in these matters, that the instruments employed in his meteorological work were the best obtainable. I know that he spared neither time nor money to obtain the best results.

The hours at which the thermometer was noted were: From October 1, 1812, to January 1, 1842, sunrise; 2 p. m.; sunset; 10 p. m. From January 1, 1842, to September, 1853, sunrise; 9 a. m.; 3 p. m.; 9 p. m. From September, 1853, to the present time, 7 a. m.; 2 p. m.; 9 p m. These last hours were established to conform to blanks from Smithsonian Institution.

My father died on August 1, 1876. Since his death, with some assistance from others for a year or two after his death, I have carried on the work.

Yours, very respectfully,
THOMAS R. RODMAN.

New Bedford, *January* 27, 1891.

Mean temperature (degrees Fahr.) observed at New Bedford, Mass.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1813 ...	27.2	29.8	32.9	45.7	52.4	63.6	69.1	70.3	65.3	51.8	44.0	31.4	48.6
1814 ...	26.8	31.9	34.8	47.1	59.8	62.3	68.2	67.6	61.9	52.1	42.7	29.5	48.7
1815 ...	26.5	25.1	37.7	42.8	52.1	63.5	70.4	66.2	61.3	51.3	44.5	30.6	47.7
1816 ...	26.2	30.2	33.5	43.1	51.8	58.8	63.6	66.0	58.5	52.8	44.7	34.3	46.2
1817 ...	26.4	22.5	32.7	44.7	53.6	61.2	68.2	69.1	62.6	51.3	44.3	35.0	47.6
1818 ...	28.4	24.1	36.4	41.8	54.5	66.7	71.8	67.7	61.7	53.0	45.2	28.6	48.3
1819 ...	32.3	33.6	31.7	43.6	52.4	66.7	70.5	70.5	66.0	52.4	44.3	32.2	49.7
1820 ...	24.6	33.0	35.9	44.8	53.9	65.6	72.6	70.8	63.8	52.2	40.6	29.4	48.9
1821 ...	22.7	33.5	34.5	42.0	54.9	64.2	67.5	70.4	64.1	52.1	42.1	32.0	48.3
1822 ...	25.5	29.8	38.8	46.0	58.5	65.7	72.4	68.1	66.8	54.5	45.2	33.0	50.4
1823 ...	29.7	24.9	34.7	45.5	53.3	62.8	68.3	69.7	59.4	51.0	38.6	35.5	47.8
1824 ...	33.1	31.2	35.9	47.3	54.3	63.8	70.2	66.8	62.4	53.1	41.8	30.7	49.7
1825 ...	31.4	32.7	40.2	47.2	56.3	68.5	74.4	69.6	61.1	54.7	43.2	35.4	51.2
1826 ...	32.0	34.0	38.5	43.1	61.4	64.6	71.2	70.1	64.7	54.3	43.4	34.9	51.0
1827 ...	25.9	31.8	37.8	48.9	54.6	63.5	70.1	68.1	62.7	54.4	37.0	34.8	49.1
1828 ...	34.1	37.5	38.0	42.8	54.4	66.2	70.3	70.5	63.3	50.8	44.0	37.4	50.8
1829 ...	27.7	24.0	31.9	44.3	55.7	62.4	66.4	67.0	57.2	49.9	42.1	39.5	47.4
1830 ...	28.5	27.5	37.3	46.8	55.6	64.7	71.3	68.8	60.1	53.4	48.2	36.4	49.9
1831 ...	24.3	25.6	39.8	46.8	57.8	69.4	71.0	72.2	63.8	54.9	41.0	21.0	49.0
1832 ...	30.1	29.3	35.4	40.4	51.6	61.1	66.4	68.6	61.0	53.4	43.4	32.9	47.8
1833 ...	32.3	26.8	33.7	47.7	57.8	62.2	68.6	66.1	61.5	52.6	39.6	33.4	48.5
1834 ...	26.3	34.8	36.9	46.8	52.5	62.9	70.9	68.0	63.0	50.0	39.7	30.4	48.5
1835 ...	26.8	26.2	32.6	42.8	53.9	63.0	69.0	67.0	57.9	54.6	41.7	26.4	47.0
1836 ...	28.3	22.2	32.3	41.9	53.7	60.0	68.1	63.9	60.5	46.1	37.3	31.3	45.5
1837 ...	23.9	27.1	32.0	43.0	52.8	62.1	66.5	64.9	58.4	49.8	41.9	30.4	46.1
1838 ...	34.2	21.4	35.9	41.1	52.2	66.1	73.1	69.3	61.3	48.8	37.4	28.5	47.4
1839 ...	28.4	30.1	36.1	44.8	55.5	61.2	69.6	65.8	61.3	51.8	39.1	32.9	48.0
1840 ...	21.5	34.2	36.4	46.3	52.5	62.8	68.7	69.7	59.6	52.4	40.1	29.6	47.8
1841 ...	31.7	26.3	35.7	41.5	51.0	64.0	66.8	66.8	61.9	45.8	39.1	33.2	47.0
1842 ...	31.4	34.3	39.5	44.1	50.6	60.3	68.2	66.8	58.8	50.5	38.0	29.0	47.5
1843 ...	34.3	22.3	27.6	43.8	53.3	64.2	67.7	69.6	62.0	50.5	37.7	31.9	47.0
1844 ...	21.4	29.5	36.3	48.8	56.7	63.6	67.4	67.7	61.8	52.0	41.4	33.8	48.4
1845 ...	32.0	29.1	37.8	44.4	53.6	63.7	69.6	70.5	61.0	51.4	46.3	28.9	49.0
1846 ...	30.0	25.2	38.8	46.9	55.0	62.0	69.0	68.5	66.4	51.6	46.1	31.1	49.2
1847 ...	30.9	29.9	33.0	42.5	52.9	64.0	69.6	67.8	62.4	51.1	45.9	38.4	49.0
1848 ...	33.0	28.1	35.0	45.8	55.6	65.1	67.9	68.5	60.2	52.1	39.2	38.8	49.1
1849 ...	25.4	24.1	37.3	44.2	53.7	65.2	69.2	68.9	61.7	51.1	47.9	32.3	48.4
1850 ...	32.0	33.2	34.7	45.3	51.5	61.9	70.2	67.3	61.5	53.6	42.4	29.6	48.3
1851 ...	29.7	31.3	37.5	41.8	54.2	62.9	68.9	66.3	61.0	54.6	38.3	25.8	48.0
1852 ...	25.0	29.0	34.7	41.6	54.7	64.9	70.5	66.4	61.7	52.6	39.7	38.3	48.3
1853 ...	29.5	31.9	36.0	44.9	55.2	64.8	69.7	68.7	61.9	51.0	43.6	30.5	49.4
1854 ...	28.8	26.6	34.0	43.3	57.2	65.3	72.4	70.9	62.1	56.3	43.7	28.3	49.1
1855 ...	32.0	23.4	33.8	44.5	53.8	64.5	69.7	66.3	61.2	54.2	43.0	34.2	48.4
1856 ...	21.0	22.6	29.1	45.3	52.8	65.6	71.8	68.4	64.0	51.8	41.5	27.6	46.8
1857 ...	18.6	33.1	33.0	41.2	53.5	62.4	69.5	68.0	61.4	52.0	43.2	36.0	47.6
1858 ...	34.1	25.0	33.1	45.9	52.1	65.6	68.8	66.2	62.0	54.1	37.4	32.5	48.1
1859 ...	29.2	31.6	39.6	43.7	55.2	62.8	68.2	67.7	59.5	47.6	43.0	29.3	48.1
1860 ...	30.5	28.3	38.0	43.6	54.9	64.8	68.3	70.1	60.8	52.7	45.3	29.7	48.9
1861 ...	26.8	34.0	36.3	45.7	54.2	65.0	70.6	67.7	63.3	57.7	42.4	34.0	49.8
1862 ...	29.0	28.4	36.0	44.8	58.6	64.0	69.3	70.0	64.2	55.4	45.9	33.1	49.9
1863 ...	35.5	31.6	31.5	45.6	57.1	62.4	71.3	72.5	60.2	54.8	46.3	31.9	50.0
1864 ...	30.4	32.5	37.2	43.9	58.5	65.2	67.0	68.9	57.5	48.4	42.4	33.0	48.8
1865 ...	23.3	29.4	39.8	49.6	57.7	68.8	71.5	70.0	67.4	51.9	45.3	36.0	50.9
1866 ...	25.7	30.5	33.0	46.8	53.6	60.2	72.1	65.8	63.6	51.5	43.8	31.7	48.2
1867 ...	22.4	35.0	33.5	45.7	53.5	65.0	67.7	70.6	61.6	53.1	46.9	26.9	48.0
1868 ...	25.4	23.7	35.2	41.8	52.8	62.9	71.2	69.1	62.5	49.0	40.4	28.5	46.9
1869 ...	32.5	32.3	33.1	47.3	55.5	65.5	70.9	65.3	61.3	49.4	37.8	32.7	48.6
1870 ...	35.4	28.6	31.6	46.1	54.4	66.7	70.9	70.6	62.1	54.0	43.4	32.1	49.7
1871 ...	26.6	27.9	40.1	46.8	55.0	63.8	69.1	70.0	57.8	53.2	36.8	28.4	48.0
1872 ...	25.8	28.2	27.2	44.6	56.0	66.0	72.1	70.3	62.5	50.7	39.4	24.2	47.3
1873 ...	27.0	26.5	33.0	43.7	53.3	62.8	69.8	67.8	60.5	52.9	34.6	33.3	47.1
1874 ...	32.3	28.0	33.4	37.9	54.2	64.1	69.0	65.4	62.6	52.1	40.4	31.2	47.6
1875 ...	21.6	21.7	30.2	40.5	53.7	63.4	68.6	69.1	59.7	50.7	36.0	30.5	45.5
1876 ...	31.4	28.9	33.2	43.8	54.2	67.4	73.4	68.9	59.9	48.6	41.6	23.9	47.9
1877 ...	24.9	32.5	35.6	45.3	55.2	65.8	70.1	71.4	63.5	52.2	44.0	36.6	49.7
1878 ...	29.4	31.2	39.7	49.1	56.1	63.4	71.9	68.7	63.9	55.4	40.8	30.4	50.0
1879 ...	24.9	25.4	34.8	42.5	57.9	64.5	69.3	67.3	61.1	56.8	40.1	35.4	48.3
1880 ...	36.8	32.9	34.2	45.8	60.3	66.7	70.1	68.3	63.1	50.9	38.3	27.5	49.6
1881 ...	23.4	28.2	36.8	42.6	55.7	61.0	67.8	68.5	66.2	54.4	43.8	38.3	49.9
1882 ...	28.0	31.3	36.5	42.9	49.4	64.9	70.3	69.3	63.4	55.2	39.0	30.0	48.4
1883 ...	25.6	28.7	29.8	42.7	55.0	66.9	69.8	67.0	60.2	48.6	43.1	30.6	47.3
1884 ...	26.1	33.5	34.8	42.8	54.6	64.2	66.3	67.0	64.4	52.1	40.9	33.4	48.3
1885 ...	27.5	20.4	27.7	45.4	52.9	63.7	70.4	67.1	58.8	51.3	44.1	32.9	46.8
1886 ...	27.2	26.7	33.5	46.9	55.3	62.8	69.1	66.6	62.9	51.8	43.5	29.9	48.0
1887 ...	26.7	29.4	31.4	43.1	57.5	62.7	71.8	66.5	58.4	50.3	40.7	32.2	47.6
1888 ...	20.0	28.2	31.0	41.7	53.1	64.8	66.2	67.5	58.7	47.4	43.4	32.6	46.2
1889 ...	34.0	25.2	36.1	46.1	57.1	65.3	68.1	66.7	62.2	49.1	43.8	38.0	49.3
1890 ...	34.6	34.0	33.8	44.7	54.5	62.9	67.8	67.2	62.3	49.7	41.1	27.4	48.3
Mean..	28.3	28.9	34.9	44.3	54.7	64.0	69.6	68.3	61.8	52.0	41.8	31.9	48.4

Table of miscellaneous meteorological data for May, 1891—Signal Service observations.

Stations and districts.	Elevation above sea-level, feet.	Pressure, in inches.			Temperature of air, in degrees Fahrenheit.								Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.		Wind.					Cloudless days.	Partly cloudy days.	Cloudy days.	Days with rainfall.	Average cloudiness, tenths.		Mean temperature data since opening of station.				
		Mean actual.	Mean reduced.	Monthly range.	Monthly mean.	Departure from normal.	Maximum.	Mean maximum.	Minimum.	Mean minimum.	Greatest daily range.	Least daily range.			Precipitation, in inches.	Departure from normal precipitation.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					8 a. m.	8 p. m.	Length of record, years.	Highest for month.	Year.	Lowest for month.	Year.
New England.					52.9	— 0.8									1.99	— 1.58															
Eastport	53	29.91	29.97	0.90	47.6	+ 0.5	70	55.0	34	40.3	27	2	37.6	73.6	1.64	— 2.59	4,680	s.	24	se.	16	9	11	11	10	3.7	5.4	19	49.4	*	45.3	*
Portland	99	29.88	29.99	0.76	49.8	— 3.7	69	57.4	32	42.1	27	7	40.8	74.7	3.47	+ 0.19	5,703	e.	39	sw.	18	9	10	12	16	5.5	6.0	20	59.7	1880	48.8	1888
Manchester	247	29.75	30.01	0.75	55.2	.....	88	67.0	32	43.4	50	7	38.1	57.2	1.90	— 1.81	3,856	nw.	30	w.	4	14	8	9	7	4.0	5.4	5	61.1	1887	53.5	1888
Northfield	872	29.07	30.01	0.70	50.7	.....	85	62.8	27	38.6	45	8	42.5	70.9	2.46	.....	6,476	s.	54	w.	4	7	11	13	13	5.6	6.5	1.5	5	58.9	1887	50.7	1891
Boston †	125	29.88	30.02	0.80	55.8	— 0.4	81	64.6	33	47.0	40	6	44.7	70.5	2.05	— 1.21	8,338	sw.	36	sw.	4	7	16	8	8	6.2	5.1	21	62.6	1880	49.8	1882
Nantucket	14	30.02	30.03	0.88	51.4	.....	70	57.3	37	45.4	26	3	44.5	77.4	2.05	.....	8,144	sw.	38	ne.	12	12	14	5	7	5.4	5.0	5	55.0	1887	50.5	1888
Woods Holl	22	.....	.....	....	52.4	.....	67	58.6	35	46.2	20	6	.....	....	1.94	— 1.18	10,397	sw.	46	w.	5	5	16	10	7	...	5.1	14	57.3	1880	50.7	1888
Vineyard Haven	.....	.....	.....	....	56.2	.....	77	65.8	35	46.6	31	10	.....	....	1.58	.....	.....	se.	....	.....	...	12	6	13	8	...	...	5	59.5	1889	54.5	1888
Block Island	27	30.01	30.04	0.83	51.9	— 0.4	70	57.9	36	45.9	24	5	47.4	88.8	1.41	— 2.36	10,665	sw.	38	ne.	12	2	19	10	9	5.8	4.0	11	55.8	1887	48.9	1882
Narragansett Pier	22	.....	.....	....	54.8	+ 0.2	77	64.6	28	45.1	27	10	.....	....	2.20	— 1.45	.....	sw.	....	.....	...	9	19	3	9	...	...	10	57.6	1887	50.7	1882
New Haven	107	29.91	30.03	0.78	56.0	— 0.6	86	65.5	31	46.4	34	8	44.6	67.9	1.92	— 1.62	5,856	sw.	31	s.	4	7	15	9	5	4.6	5.2	19	64.0	1880	51.3	1882
New London	47	29.97	30.02	0.82	54.7	— 1.5	79	62.9	31	46.5	33	6	45.8	75.2	1.42	— 2.15	5,326	sw.	25	nw.	17	3	19	9	11	6.4	6.7	21	61.3	1880	51.5	1882
Mid. Atlantic States.					60.7	— 1.7									3.26	— 0.34															
Albany	85	29.94	30.03	0.67	57.2	— 2.1	89	68.3	34	46.2	40	10	43.7	65.2	1.69	— 1.35	5,289	nw.	30	nw.	16	5	18	8	12	6.1	5.0	18	66.4	1880	55.9	1882
New York City	185	29.84	30.03	0.70	59.9	+ 0.4	84	68.4	38	51.4	30	9	46.2	67.8	3.10	+ 0.05	8,629	nw.	38	nw.	6	3	16	12	11	4.4	6.5	21	64.8	1880	53.5	1882
Harrisburg	377	29.65	30.06	0.53	60.0	.....	89	70.0	36	50.0	32	6	44.8	61.4	1.77	— 3.31	5,443	nw.	30	nw.	4	8	8	15	10	5.7	6.6	3	62.6	1889	60.0	1891
Philadelphia	117	29.93	30.05	0.66	61.0	— 1.9	90	70.1	36	51.8	30	7	45.4	62.6	1.74	— 1.23	8,339	nw.	34	nw.	16	5	10	16	12	6.1	6.5	21	68.3	1880	57.3	1882
Atlantic City	53	30.00	30.05	0.72	56.6	— 0.4	83	62.8	33	50.4	29	2	48.4	78.4	3.93	+ 1.16	9,518	s.	47	nw.	22	11	9	11	13	5.2	4.7	18	63.2	1880	53.2	1882
New Brunswick	.....	.....	.....	....	58.8	.....	90	70.7	31	46.8	40	13	.....	....	2.91	.....	.....	s.	....	.....	...	3	13	15	9	...	...	...	.....	.....	.....	.....
Baltimore	76	29.98	30.07	0.60	62.2	— 1.7	88	70.6	40	53.8	30	2	46.2	60.5	3.11	— 0.44	4,826	ne.	25	n.	22	13	5	13	14	5.5	4.2	21	70.6	1880	59.4	1882
Washington City	112	29.95	30.07	0.58	61.4	— 2.2	89	70.6	38	52.1	37	5	48.8	68.4	3.72	— 0.18	4,960	nw.	26	nw.	11	12	6	13	13	5.7	6.4	21	70.5	1880	59.2	1882
Cape Henry	.....	.....	.....	....	62.1	— 2.7	87	68.8	44	55.4	28	5	.....	....	4.05	+ 0.15	.....	s.	....	.....	...	9	10	12	12	...	...	18	70.2	1880	61.0	1877
Lynchburgh	685	29.34	30.07	0.60	62.2	— 3.5	90	72.4	34	52.0	38	3	48.0	65.4	5.95	+ 2.23	3,475	s.	25	nw.	5	8	10	13	19	6.0	5.9	20	71.7	1880	62.2	1891
Norfolk	43	30.01	30.05	0.73	63.9	— 1.8	89	72.2	44	55.6	32	4	54.8	79.2	3.58	— 0.45	6,621	ne.	40	nw.	3	15	3	13	13	4.8	5.6	21	73.3	1880	63.0	*
S. Atlantic States.					67.6	— 2.7									3.65	— 0.19															
Charlotte	773	29.22	30.04	0.64	65.4	— 3.1	90	76.3	38	54.6	35	5	51.2	68.2	7.58	+ 3.13	4,586	s.	36	w.	12	18	4	9	12	4.1	5.0	13	71.2	1881	65.3	1882
Hatteras	11	.....	.....	....	66.3	— 0.2	78	71.7	50	60.9	24	6	.....	....	5.98	+ 1.80	.....	s.	....	.....	...	7	7	17	13	...	...	11	69.1	1887	64.3	1882
Kitty Hawk	9	30.03	30.04	0.79	62.2	— 3.6	81	69.1	45	55.3	25	4	57.2	86.8	2.97	— 0.73	10,490	ne.	48	ne.	5	10	7	14	14	4.7	4.6	17	69.8	1890	60.3	1877
Raleigh	388	29.64	30.05	0.66	64.5	— 3.0	90	74.5	38	54.5	36	3	52.8	70.0	9.24	.....	4,051	n.	36	n.	23	15	5	11	15	5.1	5.3	5	70.1	1887	64.5	1891
Southport	.....	.....	.....	...	67.4	— 3.0	82	75.0	40	59.9	30	7	.....	....	2.24	— 0.87	.....	s.	....	.....	...	19	6	6	8	...	...	16	74.4	1888	66.1	1877
Wilmington	78	29.97	30.05	0.74	67.6	— 2.4	85	76.3	41	58.9	26	10	57.2	74.8	1.03	— 3.32	5,539	s.	29	nw.	3	10	14	7	8	4.3	3.8	21	73.4	1872	64.3	1877
Charleston	52	29.98	30.03	0.62	70.2	— 2.5	92	77.7	51	62.7	27	8	61.7	78.8	3.85	— 0.21	4,634	ne.	30	nw.	14	11	12	8	12	4.0	4.2	20	76.3	1879	68.8	1877
Columbia	.....	.....	.....	....	.....	.....	100	83.6	41	56.8	38	12	.....	....	2.92	.....	.....	ne.	....	.....	...	22	0	9	10	...	...	4	73.0	1889	70.2	1891
Augusta	183	29.84	30.06	0.58	69.0	— 3.8	93	80.3	42	57.7	38	9	55.6	68.1	4.57	+ 1.14	3,102	se.	22	ne.	27	19	4	8	7	3.9	4.6	20	75.7	1878	69.0	1891
Savannah	87	29.95	30.05	0.56	70.6	— 2.9	91	79.3	50	62.0	27	11	60.2	75.8	1.87	— 1.06	5,179	sw.	30	ne.	6	14	8	9	11	4.4	4.9	21	77.1	1878	70.2	1877
Jacksonville	43	29.99	30.04	0.49	72.8	— 2.3	92	82.5	54	63.0	33	7	60.0	69.8	2.78	— 1.63	4,882	ne.	37	nw.	27	11	11	9	10	3.5	4.4	20	78.2	1878	72.8	1891
Florida Peninsula.																															
Jupiter	28	29.99	30.02	0.35	74.4	.....	89	82.2	58	66.5	24	8	69.2	85.4	6.30	.....	7,597	s.	36	n.	22	14	8	9	11	3.6	3.8	4	76.3	1888	74.4	1891
Key West	22	30.02	30.04	0.27	77.0	— 2.8	86	80.7	67	73.2	14	4	66.5	71.8	0.24	— 3.25	7,672	nw.	36	ne.	7	22	4	5	1	3.8	2.8	21	82.4	1873	77.0	1891
Miceo	.....	.....	.....	....	75.4	*l*	92	84.1	57	66.7	36	6	.....	....	3.04	.....	.....	ne.	....	.....	...	4	6	9	10	...	...	3	76.0	1890	73.4	1889
Tampa	36	30.01	30.05	0.35	73.8	.....	88	83.5	56	64.1	27	11	64.1	75.2	0.69	— 2.14	4,622	w.	24	e.	20	11	15	5	3	2.7	1.6	2	.....	.....	.....	.....
Titusville	44	29.99	30.03	0.40	73.6	.....	90	81.6	58	65.5	20	7	67.4	84.2	2.46	.....	9,347	se.	40	n.	8	14	13	4	12	3.0	3.0	4	75.3	1888	73.1	1889
Eastern Gulf States.					71.3	— 1.7									1.72	— 2.70															
Atlanta	1,139	28.88	30.06	0.50	67.4	— 1.4	89	77.8	42	57.0	34	6	50.4	61.3	2.17	— 1.72	4,659	nw.	27	n.	5	17	7	7	10	4.4	3.5	13	72.0	1887	66.1	1885
Pensacola	56	29.99	30.05	0.46	72.0	— 2.1	87	79.5	54	64.6	22	8	60.5	70.4	2.25	— 1.29	7,228	sw.	33	s.	19	22	8	1	6	2.2	2.5	12	76.1	1881	71.4	1889
Auburn	.....	.....	.....	....	69.6	.....	89	79.1	45	60.1	26	9	.....	....	4.07	.....	.....	e.	....	.....	...	18	8	5	5	...	...	14	75.2	1855	67.0	1882
Mobile	35	30.02	30.06	0.47	72.2	— 1.9	90	81.8	50	62.6	28	9	62.4	78.0	0.67	— 3.97	5,646	n.	30	nw.	26	14	13	4	7	2.7	4.4	21	76.6	1881	70.5	1889
Montgomery	217	29.82	30.05	0.50	71.4	— 1.9	93	83.2	46	59.6	32	8	55.0	62.7	3.46	— 0.76	3,264	sw.	24	sw.	18	22	3	6	10	2.7	3.5	19	75.7	1887	70.1	1885
Meridian	358	29.69	30.07	0.41	68.8	.....	90	81.5	41	56.1	38	13	55.5	67.0	1.36	.....	3,359	n.	26	n.	26	18	9	4	8	2.5	3.5	2	.....	.....	.....	.....
Vicksburg	222	29.82	30.05	0.44	71.2	— 1.8	89	80.9	48	61.4	26	6	57.8	68.0	1.00	— 3.90	3,976	n.	36	nw.	4	15	9	7	7	3.5	3.3	20	76.2	1881	71.0	1883
University	.....	.....	.....	....	67.0	.....	90	78.8	41	55.3	35	10	.....	....	1.58	.....	.....	n.	....	.....	...	1	29	1	8	...	...	4	70.2	1888	67.0	1891
New Orleans	54	30.01	30.07	0.44	73.8	— 1.3	89	81.6	53	65.9	22	11	61.4	68.9	0.76	— 4.56	6,004	sw.	33	se.	4	23	8	0	3	1.8	3.3	21	76.8	1881	72.5	1877
Port Eads	.....	.....	.....	....	73.8	.....	85	79.2	64	68.3	15	9	.....	....	0.10	.....	.....	ne.	....	.....	...	10	12	9	1	...	...	5	76.1	1881	73.4	1889
Western Gulf States.					70.0	— 2.7									1.51	— 3.04															
Shreveport	249	29.78	30.04	0.53	70.2	— 4.1	88	79.8	48	60.7	27	5	59.6	73.7	0.88	— 3.59	4,275	se.	23	se.	20	12	11	8	7	5.3	4.3	20	76.1	1880	70.2	1891
Fort Smith	492	29.55	30.06	0.70	66.6	— 2.7	89	77.9	42	55.2	34	12	55.0	69.1	2.68	— 1.76	4,227	e.	24	se.	4	12	13	6	14	4.7	4.6	9	72.8	1886	65.6	1885
Little Rock	309	29.74	30.06	0.64	67.6	— 2.7	89	76.5	47	58.6	28	5	58.0	74.6	2.38	— 3.08	4,262	ne.	26	s.	2	7	11	13	10	4.8	6.0	12	74.8	1880	66.1	1882
Corpus Christi	20	30.01	30.03	0.42	74.2	— 1.5	84	78.5	64	69.9	16	4	67.4	77.5	0.38	— 3.07	10,199	se.	36	se.	15	5	15	11	2	4.6	4.9	5	76.6	1888	73.9	1889
Galveston	44	30.03	30.07	0.42	73.8	— 2.2	86	78.2	60	69.5	14	4	64.6	74.3	0.25	— 4.05	7,779	s.	30	ne.	7	16	12	3	4	4.3	4.5	21	78.1	1872	73.7	1889
Palestine	511	29.51	30.05	0.45	69.8	— 2.2	87	79.6	46	60.0	30	9	56.4	69.4	1.67	— 4.75	4,397	s.	36	ne.	18	11	9	11	6	5.6	4.1	10	73.8	1886	69.4	1885
San Antonio	781	29.24	30.06	0.43	71.8	— 3.2	88	80.9	47	62.6	29	7	59.0	69.1	2.36	— 0.95	5,589	se.	36	n.	26	8	14	9	8	5.8	4.5	14	79.9	1879	70.7	1885
Rio Grande Valley.					77.4	— 2.1									2.22	+ 0.94															
Brownsville	57	29.96	30.02	0.37	76.2	— 1.8	89	83.9	56	68.5	23	7	68.8	81.6	1.21	— 2.20	6,120	se.	24	*	*	10	9	12	4	4.9	5.6	14	81.1	1880	75.5	1886
Rio Grande City	230	29.79	30.03	0.47	78.6	— 2.4	97	87.9	58	69.4	32	8	68.0	78.0	3.23	+ 0.32	5,866	se.	26	e.	4	3	21	7	4	7.5	6.6	13	83.2	1879	78.2	1889
Ohio Val. & Tenn.					62.7	— 2.6									1.92	— 2.04															
Chattanooga	783	29.25	30.07	0.53	67.5	— 0.8	90	78.6	42	56.4	34	4	52.2	65.8	1.39	— 2.95	3,710	ne.	25	n.	1	11	14	6	9	4.6	4.2	13	71.0	1881	64.5	1882
Knoxville	980	29.05	30.08	0.54	63.8	— 2.4	88	74.3	38	53.4	36	2	50.2	67.2	1.91	— 1.95	3,343	n.	26	sw.	24	11	11	9	11	5.0	4.8	21	70.5	1880	63.0	1882
Memphis	330	29.74	30.09	0.60	68.2	— 1.8	91	77.7	45	58.7	28	7	58.0	74.2	1.75	— 2.47	4,653	ne.	26	nw.	2	16	9	6	4	4.8	4.6	21	74.2	1880	67.1	1882
Nashville	553	29.50	30.08	0.52	65.4	— 2.6	87	76.2	39	54.6	36	10	49.1	60.8	2.39	— 1.23	3,716	n.	24	nw.	2	11	11	9	6	5.2	5.3	21	73.4	1880	65.0	1882
Lexington	.....	28.98	.....	0.46	61.4	.....	84	69.5	36	53.3	29	8	46.8	62.4	1.17	.....	8,090	nw.	60	se.	20	10	14	7	10	6.1	5.4	4	63.2	1890	61.4	1891
Louisville	551	29.49	30.08	0.56	63.4	— 2.7	84	72.8	38	53.9	32	7	46.7	59.5	1.56	— 2.24	5,098	n.	34	s.	20	15	7	9	7	4.7	4.6	20	71.6	1881	62.5	1882
Indianapolis	766	29.28	30.09	0.58	59.6	— 3.3	86	69.5	36	49.6	31	5	44.8	62.0	1.61	— 2.60	4,283	n.	26	nw.	22	13	6	12	12	4.8	4.1	21	70.2	1881	59.6	1891
Cincinnati	628	29.43	30.10	0.51	59.6	— 4.9	85	69.1	36	50.2	32	7	44.5	60.8	1.08	— 2.41	4,553	nw.	26	nw.	4	13	7	11	8	4.1	5.0	21	70.6	1881	59.6	1891
Columbus	837	29.20	30.10	0.49	57.6	— 4.1	84	68.1	34	47.2	35	6	43.7	62.8	2.73	— 1.97	4,855	n.	24	ne.	27	10	13	8	12	5.6	4.7	13	68.7	1880	57.0	1882
Pittsburg	847	29.19	30.10	0.43	58.8	— 3.7	84	68.9	34	48.8	34	5	44.2	62.3	3.23	— 0.14	3,636	w.	24	s.	21	8	8	15	10	5.8	6.5	21	68.6	1880	57.2	1882
Parkersburgh	638	29.40	30.09	0.50	58.9	.....	85	69.9	33	47.9	42	7	47.0	69.2	1.53	— 2.41	3,470	s.	30	w.	22	10	4	17	11	6.5	5.8	3	62.4	1889	58.9	1891
Lower Lakes Region.					53.9	— 2.4									1.45	— 1.82															
Buffalo	690	29.30	30.05	0.43	51.4	— 2.3	78	59.2	28	43.6	34	6	38.8	63.2	1.36	— 1.84	7,401	sw.	34	sw.	18	7	20	4	12	6.1	4.4	21	61.6	1887	49.3	1882
Oswego	335	29.07	30.04	0.47	51.0	— 2.8	80	58.5	32	43.4	38	5	42.9	74.2	1.08	— 1.57	6,991	w.	32	nw.	4	11	9	11	6	5.8	5.9	21	61.5	1880	50.4	1882
Rochester	523	29.49	30.06	0.45	53.8	— 1.7	82	63.3	30	44.4	37	4	42.0	65.4	1.12	— 1.96	6,163	n.	34	nw.	8	6	15	10	8	5.9	6.0	21	64.2	1880	50.1	1882
Erie	714	29.30	30.07	0.42	52.8	— 2.9	80	60.3	32	45.2	27	6	45.0	73.4	1.49	— 2.02	7,051	nw.	30	sw.	21	11	9	11	11	5.7	4.7	18	64.7	1880	51.3	1882
Cleveland	751	29.30	30.10	0.48	53.9	— 2.8	82	62.5	32	45.3	33	4	43.0	67.2	2.59	— 0.76	5,222	nw.	30	sw.	20	9	13	9	10	5.1	4.3	21	65.6	1880	51.9	1882
Sandusky	629	29.42	30.10	0.44	56.4	— 2.1	85	65.4	35	47.5	36	5	42.3	64.0	1.48	— 2.03	6,167	e.	29	n.	5	10	14	7	8	5.0	5.0	13	66.8	1880	52.8	1882
Toledo	674	29.39	30.12	0.47	56.4	— 2.3	82	66.2	32	46.7	31	7	43.4	65.4	0.79	— 2.57	5,605	ne.	28	nw.	15	12	12	7	8	4.3	3.8	21	67.4	1880	53.4	1882
Detroit	724	29.32	30.09	0.44	55.7	— 1.9	81	66.0	29	45.4	31	6	39.6	61.0	1.68	— 1.78	6,538	ne.	37	nw.	21	15	10	6	7	4.1	3.7	21	64.1	1881	53.2	1882
Upper Lake Region.					50.4	— 1.0									1.23	— 2.07															
Alpena	609	29.42	30.08	0.54	48.6	— 0.4	82	58.3	26	39.0	42	6	34.4	59.4	0.10	— 3.48	7,150	nw.	39	nw.	4	16	11	4	1	3.4	3.1	19	55.1	1880	44.4	1882
Escanaba	.....	.....	.....	....	48.2	— 1.8	71	58.0	23	38.5	31	12	.....	....	0.19	— 3.37	.....	s.	....	.....	...	17	13	1	3	...	...	20	55.4	1880	44.4	1890
Grand Haven	631	29.42	30.09	0.58	51.5	— 2.4	78	60.4	30	42.6	30	10	36.8	59.2	1.31	— 2.12	7,670	n.	36	s.	9	17	7	7	9	3.0	5.0	20	61.6	1881	50.1	1888
Lansing	883	29.18	30.12	0.47	55.7	.....	82	68.0	26	43.4	37	7	40.8	61.5	1.95	— 1.31	4,745	sw.	26	nw.	5	17	7	7	11	3.6	4.1	5	66.7	1887	53.1	1888
Manistee	615	29.43	30.10	0.64	50.1	.....	77	58.3	30	41.9	28	4	36.0	59.6	0.12	.....	6,208	s.	24	s.	9	22	8	1	2	2.5	1.6	3	50.8	1889	47.9	1890
Marquette	734	29.25	30.05	0.84	49.0	+ 1.0	86	59.6	26	38.4	39	6	36.4	62.6	0.21	— 2.52	8,425	sw.	36	s.	20	14	11	6	4	3.4	2.5	20	57.2	1880	42.2	1890
Port Huron	639	29.42	30.12	0.45	51.1	— 1.3	82	61.2	27	41.0	38	3	38.0	64.0	2.17	— 1.06	8,649	n.	38	w.	8	14	11	6	9	4.3	3.4	17	60.8	1880	47.6	1882
Sault de Ste. Marie	642	29.36	30.06	0.65	47.4	.....	78	58.9	28	36.0	40	3	33.5	63.6	0.50	— 1.72	6,924	nw.	42	nw.	4	3	14	14	7	5.5	5.0	3	48.7	1889	43.4	1890
Chicago	824	29.23	30.12	0.59	53.4	— 2.9	81	61.1	35	45.7	30	3	41.2	60.8	2.09	— 1.73	11,865	ne.	51	s.	9	14	10	7	7	4.5	5.1	21	64.2	1880	51.7	1882
Milwaukee	699	29.35	30.10	0.67	52.5	— 0.9	81	62.0	31	43.0	35	5	38.4	60.0	1.47	— 1.97	7,702	n.	34	s.	21	20	6	5	8	2.2	4.1	21	61.1	1880	47.6	1888
Green Bay	616	29.44	30.11	0.78	55.7	.....	82	68.8	26	42.6	39	11	36.8	53.4	0.12	.....	6,845	s.	30	n.	16	9	18	4	2	3.2	5.5	5	62.0	1887	49.1	1890
Duluth	656	29.35	30.07	0.98	48.6	+ 0.4	86	58.5	26	38.8	39	4	32.6	58.3	2.26	— 1.38	5,054	ne.	26	w.	14	14	11	6	6	2.4	3.3	21	52.7	1871	42.2	1888

Table of miscellaneous meteorological data for May, 1891—Signal Service observations—Continued.

Stations and districts.	Elevation above sea-level, feet.	Pressure, in inches.			Temperature of air, in degrees Fahrenheit.								Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.		Wind.					Cloudless days.	Partly cloudy days.	Cloudy days.	Days with rainfall.	Average cloudiness, tenths.		Mean temperature data since opening of station.				
		Mean actual.	Mean reduced.	Monthly range.	Monthly mean.	Departure from normal.	Maximum.	Mean maximum.	Minimum.	Mean minimum.	Greatest daily range.	Least daily range.			Precipitation, in inches.	Departure from normal precipitation.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					8 a. m.	8 p. m.	Length of record, years.	Highest for month.	Year.	Lowest for month.	Year.
Extreme Northwest.					54.2	+ 0.1									1.61	— 0.81															
Moorhead	935	29.00	30.01	1.04	54.2	+ 1.1	91	68.7	22	39.8	46	10	35.1	51.8	1.03	— 1.58	8,773	n.	36	se.	28	18	10	3	7	2.5	2.9	11	60.0	*	47.8	1888
Saint Vincent	804	29.16	30.04	1.06	51.4	— 0.6	92	67.4	16	35.5	52	7	.....	.....	1.29	— 0.85	9,322	n.	44	s.	18	15	8	8	6	3.6	3.7	11	58.1	1881	43.2	1890
Bismarck	1,681	28.23	30.03	0.84	54.1	— 0.2	93	66.9	20	41.3	38	11	41.7	67.0	2.92	+ 0.31	8,853	nw.	42	se.	6	10	15	6	6	3.5	4.5	17	60.1	1881	49.2	1888
Fort Buford	1,900	27.99	30.01	0.72	53.4	— 0.9	90	66.8	17	40.0	47	11	35.4	55.4	1.49	— 0.37	7,256	nw.	34	ne.	29	10	12	9	6	4.5	4.0	13	58.3	1887	49.5	1883
Fort Yates	.....	.....	.....	.....	57.9	+ 1.2	95	73.9	22	41.9	47	10	.....	.....	1.34	— 0.06	.....	se.	....	.....	...	8	17	6	4	...	...	8	61.8	1886	50.7	1888
Upper Miss. Valley.					59.5	— 1.6									2.26	— 1.93															
Minneapolis	.....	.....	.....	.....	58.6	.....	84	70.8	28	46.4	33	13	.....	.....	1.27	.....	.....	s.	.....	.....	...	15	14	2	5	...	...	...	.....	.....	.....	.....
Red Wing	758	29.26	30.07	0.96	58.2	.....	84	70.6	30	45.9	43	12	39.4	51.4	1.16	.....	6,468	s.	35	s	9	16	12	3	5	3.3	3.0	....	.....	.....	.....	.....
Saint Paul	831	29.17	30.06	0.97	57.7	+ 0.5	83	69.8	28	45.6	37	11	41.2	62.9	1.33	— 1.98	4,811	se.	24	nw.	10	13	11	7	7	3.7	4.1	21	64.1	1887	49.8	1888
La Crosse	736	29.33	30.11	0.81	58.4	+ 0.4	83	71.0	32	45.9	37	5	38.3	52.2	0.69	— 2.52	4,245	s.	24	n.	10	13	14	4	5	3.5	3.3	19	67.7	1881	51.7	1888
Davenport	613	29.46	30.11	0.70	58.3	— 2.1	80	68.7	35	47.9	34	3	45.6	64.0	2.74	— 1.75	6,155	ne.	36	s.	20	17	7	7	12	3.1	4.0	20	69.0	1881	55.2	1888
Des Moines	869	29.16	30.09	0.89	57.8	— 3.4	83	68.7	31	46.9	36	5	44.2	63.0	3.29	— 1.77	5,675	ne.	25	n.	9	12	7	12	8	4.6	5.6	13	67.4	1880	54.5	1888
Dubuque	651	29.40	30.11	0.74	58.2	— 1.0	82	69.4	36	47.1	36	6	48.5	70.8	2.54	— 1.50	2,586	ne.	22	ne.	22	15	9	7	10	3.0	4.5	18	67.7	1881	53.0	1888
Keokuk	613	29.44	30.09	0.68	60.5	— 1.7	85	70.6	36	50.4	29	5	48.4	66.8	2.56	— 1.56	3,617	e.	36	sw.	20	19	6	6	8	2.8	4.1	20	69.8	1881	56.8	1882
Cairo	359	29.71	30.09	0.61	64.4	— 2.7	87	73.0	41	55.9	26	2	50.8	65.6	2.48	— 1.35	6,097	n.	52	nw.	2	15	9	7	6	4.8	3.9	20	72.7	1880	63.8	1882
Springfield, Ill	644	29.41	30.09	0.61	60.6	— 1.8	84	71.5	36	49.6	32	8	47.2	64.6	1.96	— 3.26	6,280	n.	30	s.	20	15	8	8	9	4.5	4.8	12	69.3	*	57.9	1882
Saint Louis	571	29.48	30.09	0.71	63.6	— 2.4	89	72.8	42	54.3	29	9	49.6	65.2	2.73	— 1.38	7,439	n.	36	sw.	22	16	10	5	7	4.4	3.8	21	71.4	1887	59.5	1882
Missouri Valley.					58.6	— 2.0									3.22	— 0.92															
Columbia	.....	.....	.....	.....	61.5	.....	91	75.2	32	47.8	38	13	.....	.....	4.29	.....	3,942	ne.	24	se.	21	9	8	14	11	...	5.1	2	.....	.....	.....	.....
Kansas City	963	29.06	30.08	0.77	60.8	— 3.7	88	70.4	40	51.2	28	4	50.2	72.0	6.85	+ 2.52	5,659	ne.	42	sw.	20	9	12	10	11	4.9	4.9	3	63.0	1890	60.8	1891
Springfield, Mo	1,356	28.64	30.06	0.65	62.4	— 4.8	86	72.8	39	52.1	29	5	49.8	68.4	3.78	— 2.56	5,319	se.	30	nw.	2	9	6	6	12	4.8	5.5	6	64.6	1890	59.7	1882
Topeka	.....	.....	.....	.....	60.7	.....	86	72.8	34	48.6	37	9	.....	.....	6.86	.....	.....	s.	....	.....	...	8	15	8	11	...	...	4	63.0	1889	60.6	1888
Omaha	1,113	28.91	30.10	0.85	59.4	— 2.6	83	69.6	38	49.1	30	5	43.0	59.0	4.94	+ 0.42	6,435	s.	45	nw.	20	10	9	12	11	5.4	5.2	21	69.4	1880	55.9	1888
Crete	.....	.....	.....	.....	59.7	.....	84	71.1	36	48.3	34	12	.....	.....	3.57	.....	.....	s.	....	.....	...	11	11	9	9	...	...	4	61.0	1889	56.8	1888
Valentine	2,613	27.33	30.03	0.83	56.6	— 0.4	92	68.7	27	44.6	38	6	41.4	62.2	1.33	— 2.45	8,995	s.	38	s.	7	7	19	5	9	4.6	4.5	6	61.1	1887	50.9	1888
Sioux City	1,158	28.83	30.07	0.93	59.0	.....	87	70.8	36	47.1	33	5	41.4	57.9	2.41	.....	7,715	s.	46	s.	8	10	10	11	11	4.2	4.5	2	.....	.....	.....	.....
Fort Sully	1,600	28.31	30.01	0.87	55.7	— 0.8	93	69.3	24	44.1	43	6	39.4	57.2	1.98	— 0.43	8,778	se.	58	sw.	8	11	9	11	10	4.2	5.3	15	64.3	1887	52.3	1888
Huron	1,307	28.63	30.03	0.96	56.0	+ 0.5	92	70.0	29	43.0	42	4	39.2	57.8	0.44	— 3.00	11,299	s.	50	s.	7	12	9	10	5	4.9	4.4	10	62.1	1887	50.4	*
Northern Slope.					54.8	+ 0.6									2.51	+ 0.66															
Ft. Assiniboine	2,690	27.17	29.97	0.65	52.5	— 0.8	92	65.1	22	39.9	53	4	35.6	59.5	3.79	+ 2.38	6,972	e.	46	ne.	8	9	9	13	12	4.5	5.2	11	57.0	1884	49.5	1883
Fort Custer	3,040	26.81	29.94	0.59	56.4	+ 1.1	94	69.1	27	43.7	51	5	36.6	57.0	1.39	— 0.71	6,352	se.	40	ne.	14	8	11	12	8	5.5	5.7	11	58.3	1886	52.2	1888
Helena	4,059	25.77	29.93	0.48	54.9	+ 1.9	88	66.5	26	43.3	42	6	31.4	49.6	2.51	+ 1.07	5,587	sw.	36	w.	17	7	9	15	13	6.8	7.4	12	55.4	1881	48.3	1880
Rapid City	3,280	26.64	29.96	0.67	53.0	.....	88	66.4	23	43.6	39	2	38.0	58.0	1.72	— 2.60	7,501	se.	36	sw.	29	...	14	10	14	4.4	6.3	7	59.7	1881	47.9	1883
Cheyenne	6,105	24.04	29.99	0.48	51.4	+ 0.1	78	63.5	30	39.3	38	2	34.4	66.0	4.72	+ 2.59	7,815	nw.	36	nw.	19	6	15	10	11	3.9	6.4	21	55.9	1874	45.7	1882
Fort McKinney	5,000	25.07	30.04	0.60	51.1	.....	85	62.5	15	40.4	43	5	34.8	55.2	2.08	.....	8,379	n.	40	se.	1	8	8	15	11	4.7	7.5	4	51.8	1890	47.9	1888
Fort Washakie	5,580	24.45	29.96	0.52	51.1	.....	81	63.7	28	38.5	42	6	31.4	52.5	4.58	+ 2.45	4,419	w.	40	sw.	8	11	14	6	10	4.2	5.7	6	52.3	1890	46.9	1882
North Platte	2,841	27.12	30.04	0.74	59.0	+ 0.3	91	71.4	34	46.6	37	5	44.0	64.6	1.69	— 1.26	8,517	se.	36	s.	7	7	20	4	10	5.6	5.1	17	63.0	1886	53.6	1883
Middle Slope.					59.4	— 1.2									3.50	+ 0.18															
Denver	5,281	24.77	29.97	0.59	56.2	— 0.4	83	67.7	32	44.6	37	3	35.8	57.1	4.15	+ 1.38	5,430	sw.	28	nw.	31	5	18	8	12	4.3	7.0	20	61.0	*	52.4	1882
Pueblo	4,734	25.27	29.97	0.56	59.0	— 0.7	86	72.4	37	45.5	42	6	33.9	48.4	2.92	+ 1.63	5,784	n.	40	e.	2	4	13	14	10	5.6	7.0	3	59.8	1889	59.0	1891
Concordia	1,410	28.58	30.06	0.79	60.5	— 1.7	89	71.5	34	50.2	34	5	47.3	66.5	4.12	— 0.10	6,835	s.	36	s.	9	11	14	6	12	4.3	3.2	7	66.2	*	58.3	1885
Dodge City	2,523	27.42	30.01	0.71	61.6	— 1.8	89	73.4	32	49.9	33	4	50.3	71.1	3.36	— 0.22	9,580	s.	48	s.	8	10	15	6	7	4.9	4.8	17	68.3	1879	56.5	1882
Wichita	1,366	28.60	30.03	0.71	62.4	.....	87	72.7	35	52.1	33	9	50.4	69.4	9.15	.....	6,871	s.	36	s.	20	9	13	9	10	5.6	4.9	3	64.7	1889	62.4	1891
Fort Reno	.....	.....	.....	.....	65.0	.....	89	76.0	40	54.2	36	9	.....	.....	2.96	— 1.80	.....	s.	....	.....	...	20	1	10	8	...	...	9	73.4	1886	64.0	1885
Oklahoma City	1,239	28.76	30.05	0.66	64.4	.....	88	74.1	40	54.0	27	6	57.6	81.8	5.92	.....	5,977	s.	36	n.	16	7	11	13	16	5.4	5.4	....	.....	.....	.....	.....
Southern Slope.					67.4	— 3.4									2.70	— 0.42															
Fort Sill ‡	1,200	28.79	30.04	0.67	65.9	— 3.7	89	75.5	43	56.3	30	5	59.0	82.8	3.72	— 0.69	8,062	s.	42	s.	21	6	12	13	12	5.8	5.6	14	75.6	1886	65.9	1891
Abilene	1,748	28.23	30.03	0.57	68.8	— 3.0	90	77.7	50	59.8	28	6	57.7	75.6	1.83	— 2.50	8,780	s.	40	s.	3	7	15	9	7	5.2	5.4	6	77.2	1886	68.8	1891
Fort Stanton	6,152	23.98	29.96	0.40	55.7	.....	78	67.9	36	43.5	40	6	28.3	46.0	2.83	+ 1.92	4,120	se.	30	se.	1	11	9	11	14	5.4	5.6	7	61.0	1890	53.0	1884
Southern Plateau.					66.1	— 1.8									1.09	+ 0.77															
El Paso	3,796	26.18	29.89	0.44	70.2	— 3.1	91	82.6	44	57.7	36	10	28.7	34.8	0.38	+ 0.09	6,738	e.	46	w.	9	14	14	3	6	3.0	3.5	13	76.8	1886	69.0	1884
Carthage	.....	.....	.....	.....	65.8	.....	89	81.4	42	50.2	40	15	.....	.....	1.96	.....	.....	sw.	....	.....	...	18	6	7	9	...	...	...	.....	.....	.....	.....
Santa Fé	7,026	23.32	30.02	0.41	52.9	— 3.4	74	64.6	30	41.2	39	9	36.8	62.1	3.21	+ 2.41	5,488	sw.	30	se.	4	9	11	11	12	3.9	6.3	19	60.0	1879	52.5	*
Fort Apache	.....	.....	.....	.....	59.8	— 0.2	85	77.6	34	41.9	46	19	.....	.....	1.17	+ 0.63	.....	sw.	....	.....	...	18	11	2	6	...	...	13	63.3	1886	55.6	1884
Fort Bowie	.....	.....	.....	.....	67.0	— 1.8	86	78.0	42	55.9	28	6	.....	.....	0.81	+ 0.63	.....	sw.	....	.....	...	19	7	5	6	...	...	8	74.1	1886	64.4	1884
Fort Grant	4,860	25.18	29.92	0.28	65.2	— 1.9	84	76.6	42	53.9	28	13	28.6	32.0	1.40	+ 1.12	5,340	w.	34	se.	5	18	10	3	6	2.8	2.2	14	69.7	1879	64.3	1884
Fort Thomas	.....	.....	.....	.....	70.1	+ 0.7	94	87.7	45	52.5	49	16	.....	.....	1.61	+ 1.06	.....	nw.	....	.....	...	20	8	3	5	...	...	12	73.7	1886	66.7	1884
Holbrook	.....	.....	.....	.....	61.6	.....	86	78.2	38	45.1	42	21	.....	.....	0.22	.....	.....	w.	....	.....	...	21	4	6	4	...	...	...	.....	.....	.....	.....
San Carlos	.....	.....	.....	.....	71.0	+ 0.2	96	91.0	40	51.1	45	28	.....	.....	1.04	+ 0.76	.....	s.	....	.....	...	19	7	5	4	...	...	10	75.0	1886	66.2	1882
Willcox	.....	.....	.....	.....	64.2	— 0.2	91	84.1	36	44.4	53	21	.....	.....	0.82	+ 0.66	.....	nw.	....	.....	...	24	3	4	4	...	...	8	70.8	1886	56.5	1884
Yuma	141	29.68	29.82	0.39	74.2	— 3.6	100	88.9	54	59.5	41	18	41.0	39.0	T.	— 0.03	5,197	sw.	36	nw.	31	28	3	0	0	0.9	1.7	16	81.8	1876	74.2	1891
Keeler	3,622	26.20	29.78	0.54	64.2	.....	86	75.4	36	52.9	28	13	35.3	38.0	0.37	+ 0.37	5,943	n.	38	n.	20	13	11	7	7	2.0	4.6	7	69.0	1890	64.2	1891
Furnace Creek	.....	29.96	.....	0.65	83.7	.....	106	97.1	54	70.3	37	17	40.4	26.2	0.18	.....	7,316	se.	48	s.	7	16	7	8	2	2.4	3.9	....	.....	.....	.....	.....
Middle Plateau.					57.2	0.0									1.43	+ 0.38															
Carson City	.....	.....	.....	.....	53.9	.....	75	66.2	32	41.6	38	13	.....	.....	2.64	.....	.....	.....	....	.....	...	12	13	6	13	4.0	5.4	4	57.0	1890	53.9	1891
Winnemucca	4,340	25.58	29.92	0.35	54.9	— 0.1	83	67.1	33	42.7	44	13	27.4	48.5	2.32	+ 1.54	6,881	sw.	48	w.	7	5	12	14	10	4.8	6.7	13	58.1	1890	51.0	1880
Fort Du Chesne	4,900	24.99	29.88	0.45	57.2	.....	85	73.0	34	41.5	46	18	22.2	30.6	1.09	.....	5,064	sw.	42	nw.	19	11	12	8	6	3.1	5.4	4	60.2	1890	56.1	1888
Salt Lake City	4,348	25.52	29.88	0.51	60.0	+ 0.7	86	70.9	38	49.2	33	13	37.9	46.7	0.72	— 1.06	4,205	se.	30	nw.	29	10	13	9	12	4.2	4.8	18	61.6	1886	53.8	1880
Taylor's Ranch	.....	.....	.....	.....	53.6	.....	85	70.6	28	36.7	49	18	.....	.....	2.61	.....	.....	w.	....	.....	...	12	14	5	9	...	...	...	.....	.....	.....	.....
Montrose	5,795	24.25	29.87	0.46	56.8	— 0.5	80	70.3	35	43.4	37	14	35.6	50.9	1.25	+ 0.66	4,870	s.	29	w.	18	15	12	4	11	4.2	5.6	7	59.8	1886	53.7	*
Northern Plateau.															0.74	— 0.84															
Baker City	3,430	26.39	29.88	0.44	56.0	.....	81	69.6	24	42.5	41	9	34.4	50.8	1.37	.....	4,113	nw.	24	nw.	20	9	11	11	9	4.3	6.0	3	.....	.....	.....	.....
Spokane Falls	1,938	27.90	29.92	0.52	59.6	+ 2.8	88	72.2	32	47.1	38	8	35.3	50.6	0.60	— 0.67	4,191	ne.	30	sw.	27	9	9	13	7	4.9	5.9	11	59.8	1884	53.1	1881
Walla Walla	1,018	28.85	29.93	0.51	64.6	.....	93	76.8	37	52.3	37	4	41.4	48.6	0.88	— 1.01	4,337	s.	28	nw.	20	8	19	4	5	4.5	5.5	6	64.8	1888	60.9	1887
N. Pac. Coast Region					55.2	+ 0.2									2.00	— 0.93															
Fort Canby	179	29.83	30.03	0.65	52.4	— 0.2	66	57.5	41	47.2	24	4	49.4	92.4	2.68	+ 0.02	6,533	n.	48	s.	4	6	9	16	9	7.7	6.2	8	55.1	1889	52.0	1887
Neah Bay	.....	.....	.....	.....	53.2	.....	69	62.9	33	43.5	28	11	.....	.....	0.91	— 3.58	.....	sw.	....	.....	...	9	5	17	6	...	...	7	54.7	1889	51.6	1886
Olympia	36	29.96	30.00	0.56	50.5	+ 1.8	84	68.3	34	44.7	40	3	47.4	77.1	1.95	— 0.45	2,551	n.	14	n.	20	11	12	8	8	4.5	3.5	14	57.4	1888	50.3	1880
Port Angeles	14	29.97	29.98	0.63	50.6	.....	70	58.7	33	42.5	30	5	46.0	87.2	0.92	— 0.63	3,371	w.	15	sw.	19	13	10	6	9	4.2	4.1	7	52.2	1889	49.0	1886
Tatoosh Island	.....	.....	.....	.....	49.5	— 1.0	60	53.3	42	45.7	14	2	.....	.....	1.90	— 2.87	.....	sw.	....	.....	...	8	8	15	11	...	...	8	53.9	1889	45.0	1890
Astoria	.....	.....	.....	.....	54.9	.....	72	61.5	38	48.3	23	6	.....	.....	1.80	— 1.51	.....	w.	....	.....	...	10	4	17	9	...	...	7	57.6	1889	53.2	1886
Portland	80	29.90	29.99	0.59	59.9	+ 0.4	84	70.4	39	49.4	35	7	47.6	70.1	1.83	— 0.65	4,030	n.	24	sw.	25	12	13	6	9	5.9	4.5	20	62.3	1888	53.0	1880
Roseburgh	523	29.45	30.01	0.55	57.6	— 0.1	82	68.4	34	46.9	40	7	45.0	70.7	3.97	+ 2.21	2,955	n.	26	sw.	3	11	9	11	11	5.2	5.0	14	60.1	1888	52.6	1880
Mid. Pac. Coast Reg.					51.6	— 2.0									1.14	+ 0.22															
Eureka	64	29.95	30.01	0.41	53.2	.....	67	57.8	42	48.7	17	5	49.1	88.0	1.55	.....	6,137	nw.	38	nw.	18	5	6	20	11	7.5	6.4	5	54.8	1889	51.9	1887
Red Bluff	342	29.57	29.92	0.34	66.3	— 1.6	92	77.7	46	54.9	35	8	49.2	61.1	1.50	+ 0.29	5,661	se.	40	nw.	20	15	13	3	8	3.5	3.6	14	70.4	1885	62.8	1879
Sacramento	64	29.86	29.93	0.43	62.7	— 2.1	88	73.7	46	51.7	30	11	52.8	74.4	0.66	— 0.19	3,919	sw.	36	nw.	20	19	9	3	4	2.2	3.0	14	65.7	1885	60.2	1879
San Francisco	109	29.87	29.99	0.33	55.7	— 2.3	75	60.9	48	50.5	21	6	49.0	82.3	1.25	+ 0.57	7,830	sw.	28	sw.	9	4	14	13	13	5.7	1.5	8	21	59.8	1890	54.3	1871
Point Reyes Light	.....	.....	.....	.....	51.4	.....	68	58.4	36	44.5	21	2	.....	.....	0.75	.....	.....	nw.	....	.....	...	6	11	14	4	...	...	3	.....	.....	51.4	1891
S. Pac. Coast Region.					61.2	— 0.7									0.23	— 0.14															
Fresno	338	29.54	29.90	0.44	67.1	.....	95	81.6	47	53.6	41	20	43.6	52.5	0.03	— 0.33	6,101	nw.	30	w.	28	19	11	1	2	2.0	2.6	4	69.6	1889	67.1	1891
Los Angeles	330	29.63	29.98	0.30	61.6	— 0.4	74	69.4	47	53.7	26	2	51.2	77.8	0.31	— 0.07	2,900	w.	18	w.	31	4	20	7	3	6.9	3.6	14	63.5	1885	60.8	1888
San Diego	93	29.90	30.00	0.27	60.8	— 1.0	67	65.4	53	56.2	14	4	52.8	75.4	0.35	— 0.01	4,001	w.	25	s.	21	9	12	10	3	9.5	5.4	20	63.3	1885	60.0	1873

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record.
* Two or more directions, dates, or years. † Precipitation is measured at the Boston Water Works. ‡ Received too late to be considered in departures, etc. Fort McKinney, March, 1891, total movement of wind should be 7605 instead of 7960.

Chart I. Tracks of Area

Form Map G—1891.

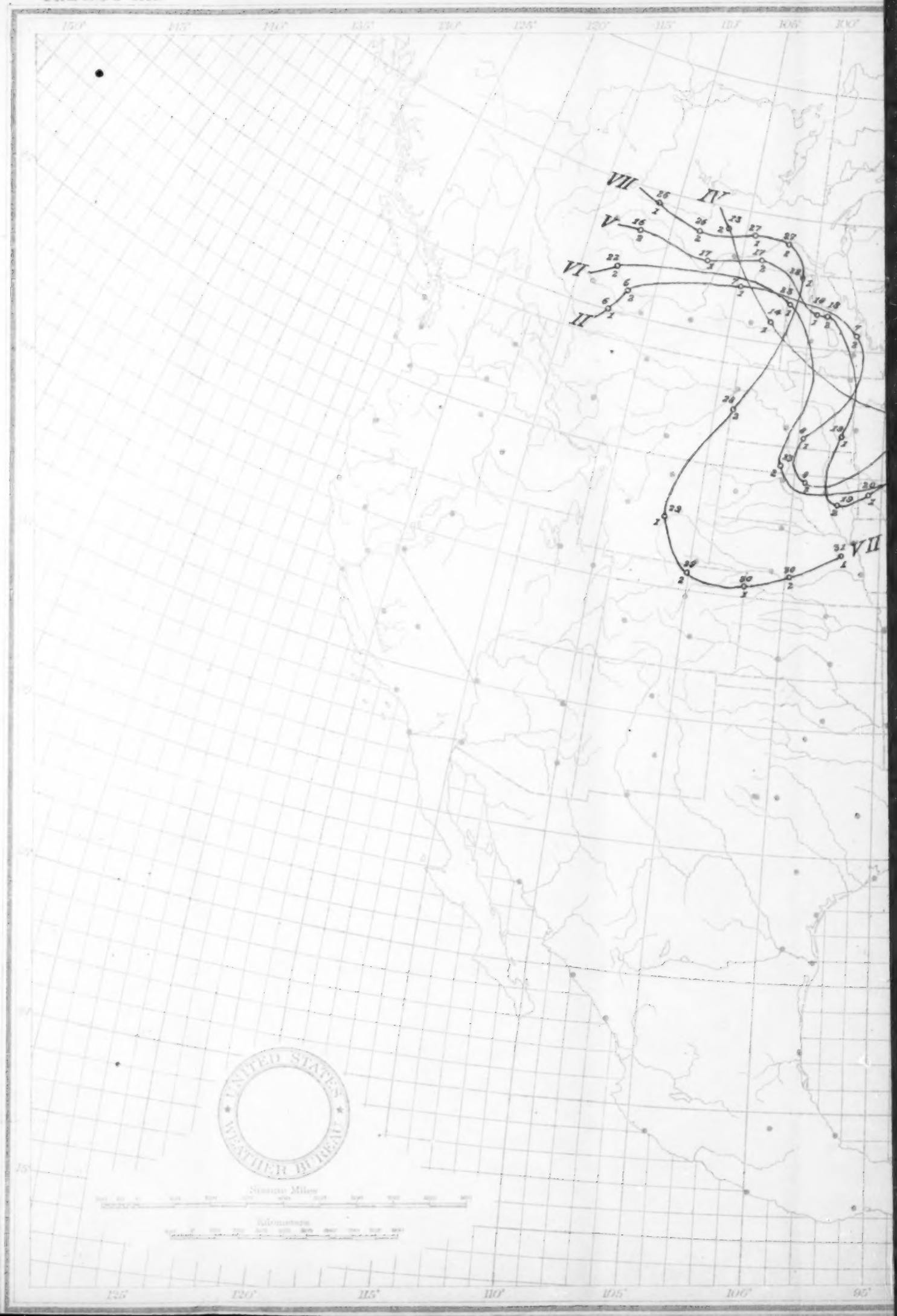
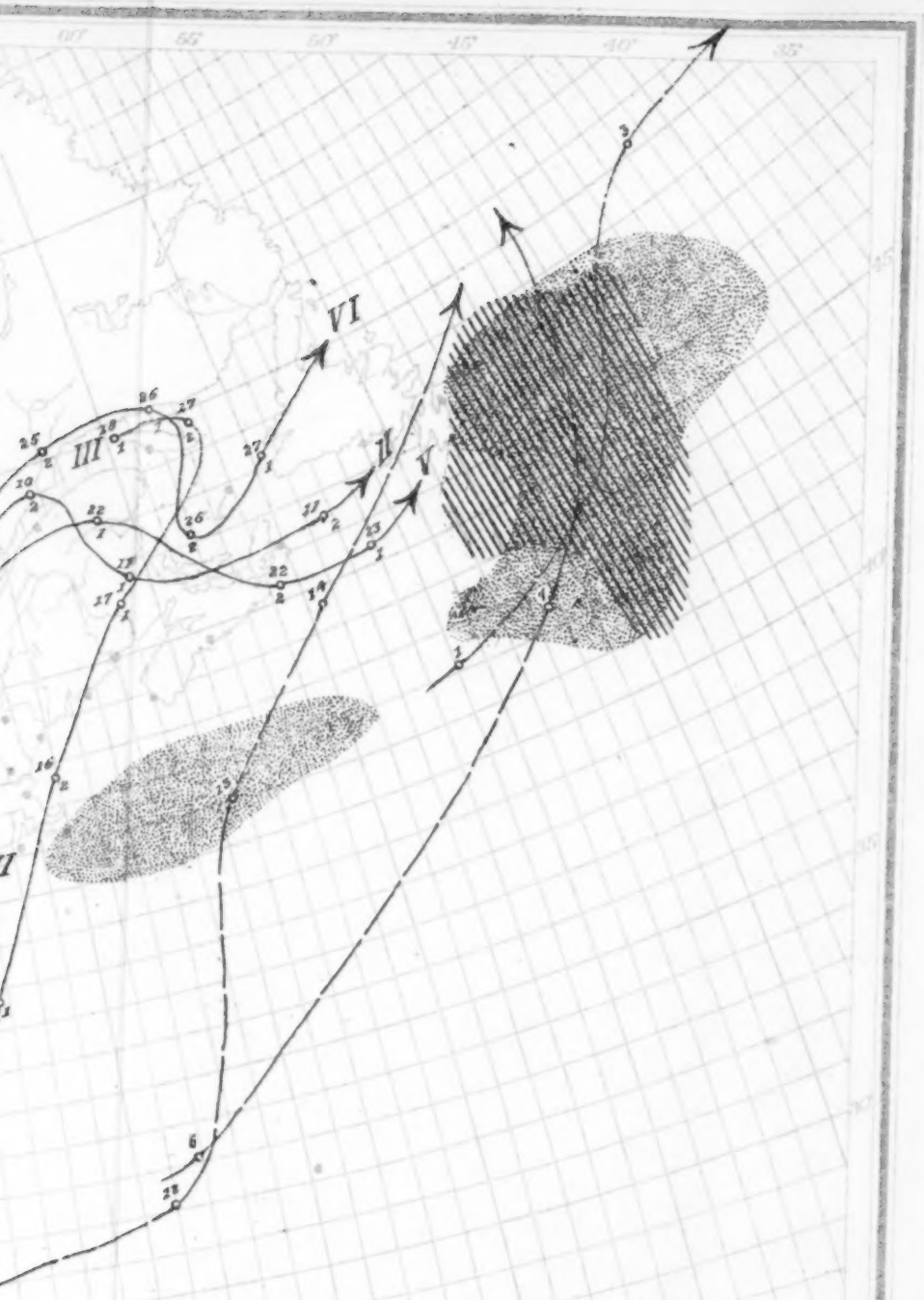


Chart I. Tracks of Areas of Low Pressure. May, 1891.



NOTES.

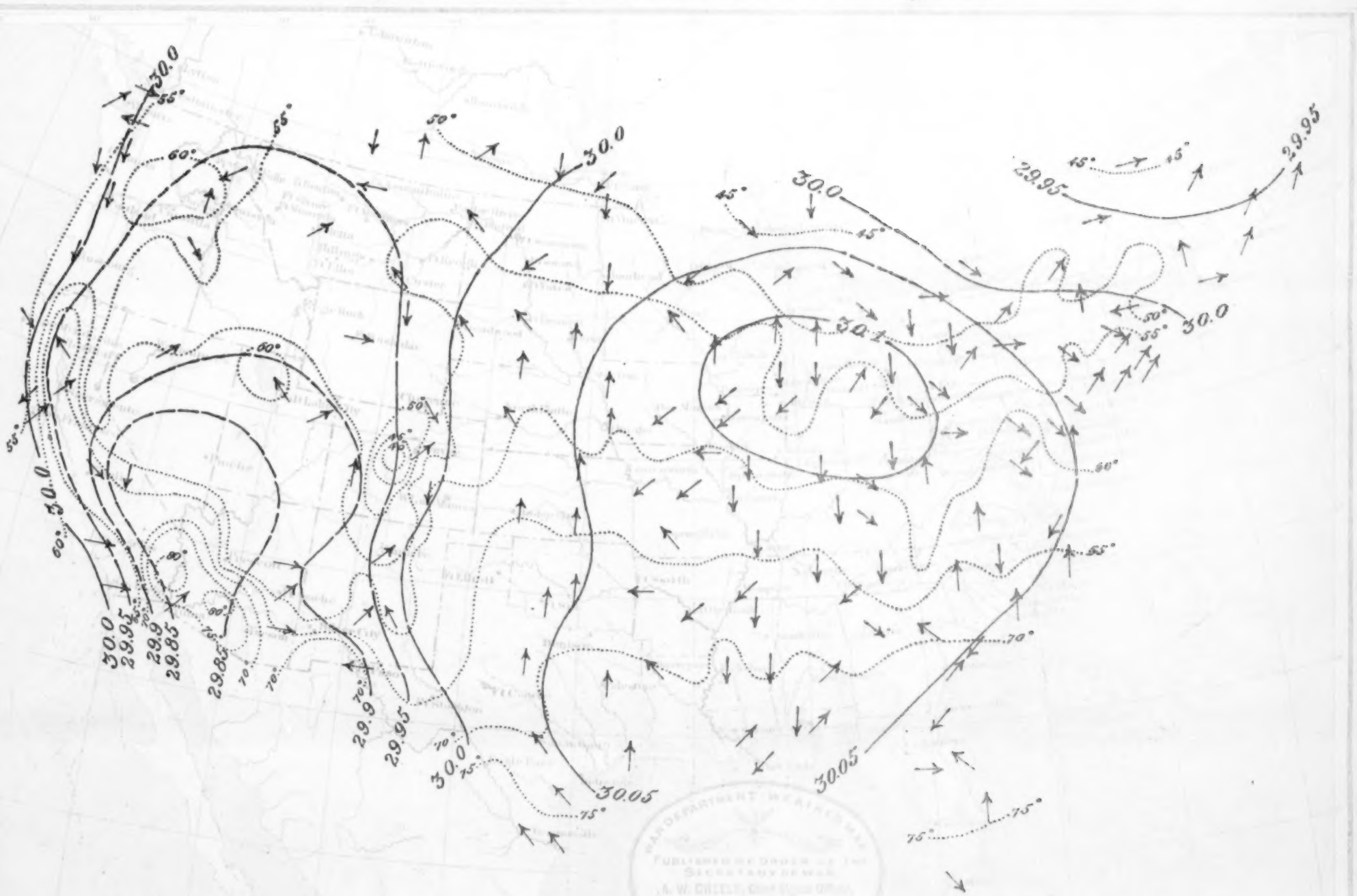
The Roman letters show number and order of areas of low pressure. The figures above the lines show the days of the month, those below (1 and 2) indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations.

The dotted shading ( ) indicates fog belts.

The ruled shading ( ) indicates the position in which field-ice or icebergs were observed.

Form 816 P.

Chart II. Isobars Isotherms, and Winds, May, 1891.

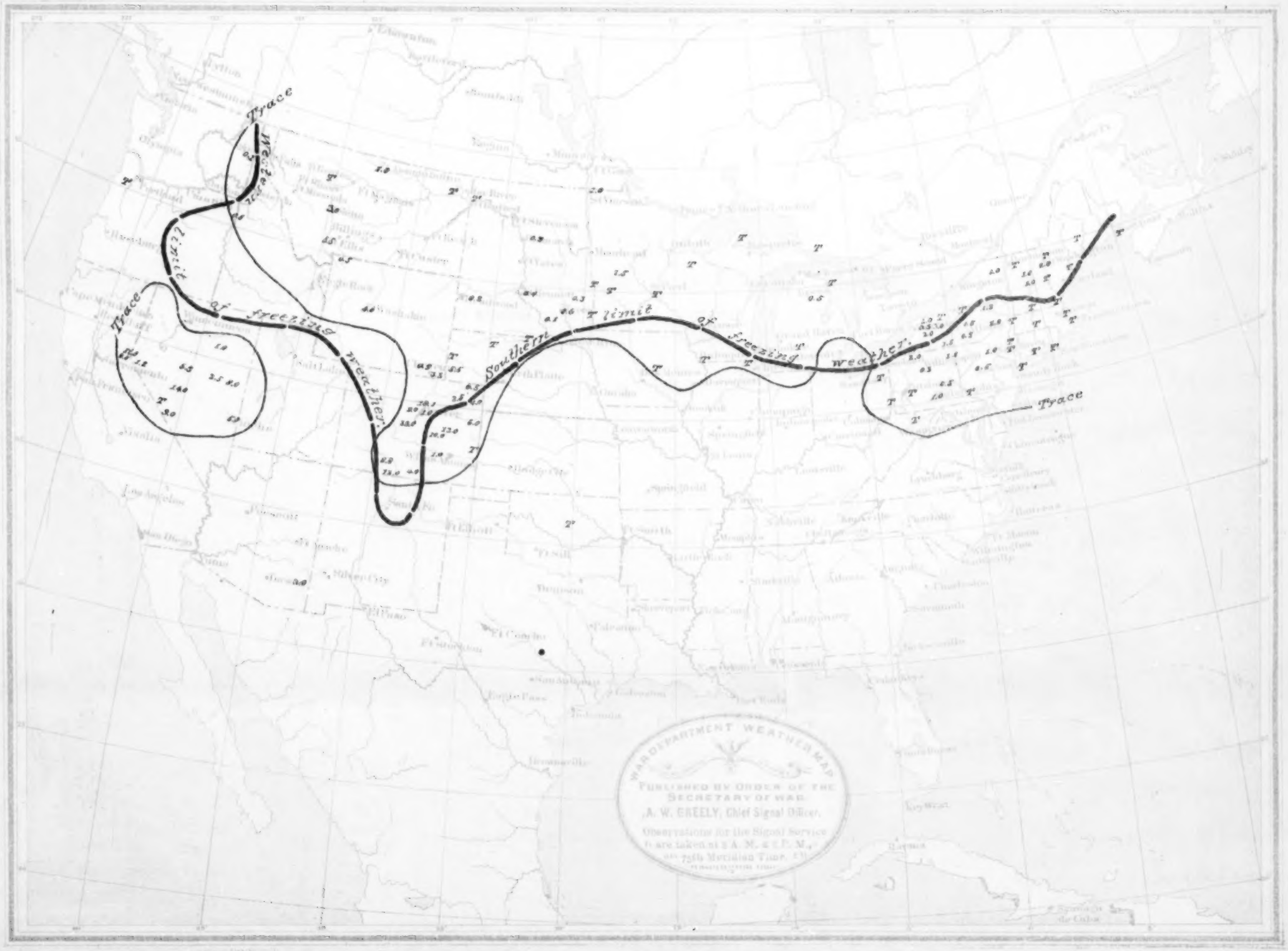


WAR DEPARTMENT WEATHER BUREAU
PUBLISHED BY ORDER OF THE SECRETARY OF WAR
A. W. GREELY, Chief Signal Officer

Chart III. Precipitation, May. 1891.

Form 106 F.

Chart IV. Depth of Snowfall (inches) during May, 1891, and Limits of Freezing Weather.


Trace
Limit of freezing weather.
Trace
Limit of freezing weather.
Southern Limit of freezing weather.
Trace
WAR DEPARTMENT WEATHER MAP
PUBLISHED BY ORDER OF THE SECRETARY OF WAR
A. W. GREELY, Chief Signal Officer.
Observations for the Signal Service are taken at 5 A. M. & 5 P. M., 75th Meridian Time.

Form 106 P.

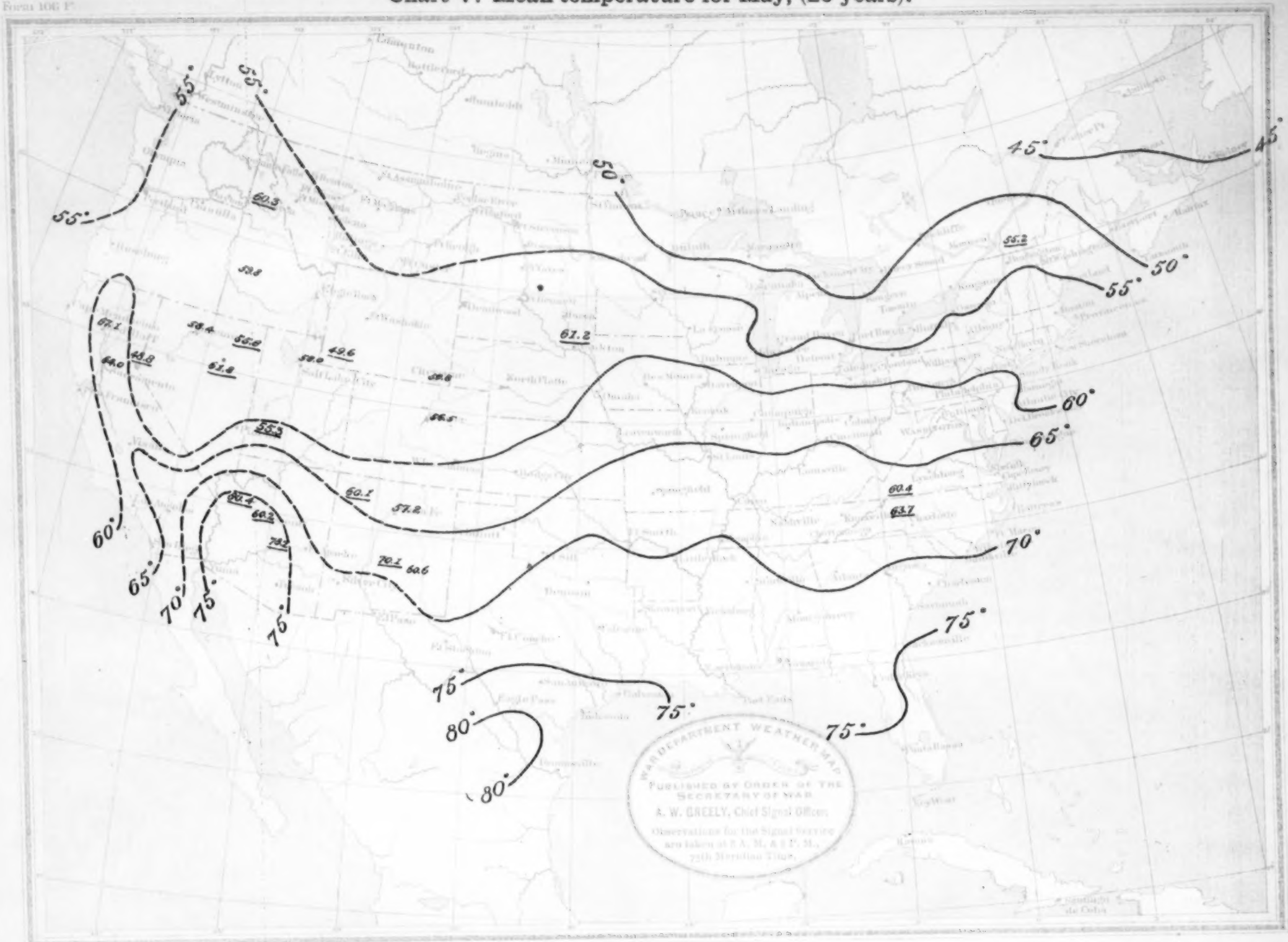



Chart V. Mean temperature for May, (20 years).